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THE

CANADIAN HORTICULTURIST

PUBLISHED BY THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO

VOLUME XXV

EDITOR, . . LINUS WOOLVERTON, M. A.

UNIVERSITY OF TORONTO

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WINDSOR.

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THE
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✳ ✳ January ✳ ✳

THE WINDSOR CHERRY.

THIS cherry has been so much talked about during the past ten years that our readers will be pleased to see a colored plate of it as a frontispiece to this number.

In Ontario the later cherries have proved rather more profitable than the early ones because of American competition. For this reason we are inclined to plant English Morello instead of Montmorency, and Elkhorn and Windsor instead of Governor Wood and Black Tartarian.

Our colored plate shows prodigious fruitfulness ; but only in exceptional cases have we found the Windsor to bunch in this way. More often the fruit hangs in twos and threes, and gives only a moderate yield. The worst fault with the Bigarreau cherries is their susceptibility to the Rot, and we have found the Elkhorn very troublesome in wet seasons. This same fault seems to be common with the Windsor, but probably can be controlled with Bordeaux spray. Indeed Mr. W. M. Orr, of Fruitland, stated at Cobourg that he had succeeded in harvesting an excellent crop of cherries of various sorts, including the Windsor, during this past season when cherries in orchards not sprayed were perfectly worthless. From his evidence it would seem that spraying the cherry is most signal in its results in controlling monilia.

This cherry originated in the grounds of the late James Dougall, Windsor, has been well tested in New York State, and has the reputation of being hardier than most other varieties.

We have grown it at Maplehurst for some years, and have planted out about two acres of the variety, but have not as yet sufficient notes to make a permanent description of it. We quote the following note from the report of the Michigan Experimental Station, which accords with our experience thus far : "Free, vigorous, and a good cropper ; fruit large heart-shaped ; color dark red ; quality very good. A very valuable market cherry."

A STEP FORWARD.

AN important change takes place from the 1st of January, 1902, in the management of the Ontario Fruit Growers' Association. Mr. L. Woolverton, of Grimsby, Ont:, who has held the combined office of Editor of this Journal and Secretary-Treasurer of the Association for fifteen years, finds the work growing upon his hands until the responsibility is too heavy for one person to carry. In order, therefore, that he might give more attention to the journal and make it more useful to the fruit growers of every part of the Province, Mr. Woolverton asked for a division of his work, and that he be relieved of the Secretary's duties. At the Cobourg meeting this request was granted and Mr. G. C. Creelman was appointed to this work for the year 1902.

With this change we anticipate a great advance in our work all along the lines. No doubt arrangements will be made by Mr. Creelman whereby local fruit growers' institutes will be held in every part of our province, and all sections will work harmoniously for the general good ; while the editor hopes to be able to come into closer touch with the fruit growers of the various districts both by visits to their fruit farms and by attending many of their local meetings.

FIG. 2203. MR. G. C. CREELMAN.

THE NEW SECRETARY.

Mr. George Christie Creelman, who was at the last annual meeting of the Ontario Fruit Growers' Association elected to the position of secretary-treasurer of that organization, is a native of this province, born in the town of Collingwood and reared on a fruit farm on the side of the Collingwood mountain. In 1888 Mr. Creelman graduated from the Agricultural College, Guelph, taking the degree of B. S. A. from the Toronto University. Immediately on graduating Mr. Creelman accepted a position on the staff of the Agricultural and Mechanical College of Mississippi, where he remained as Professor of Biology for nearly ten years. For the last three years Mr. Creelman has been Superintendent of Farmers' Institutes for the Province of Ontario, and last year, at the request of the Executive Committee of the Fruit Growers' Association he took charge of the lecture work in connection with the horticultural societies.

NOTES FROM THE BIOLOGICAL DEPARTMENT, ONTARIO AGRICULTURAL COLLEGE.

1. *More about the Home of the San Jose Scale.*

IT is interesting to note the efforts which have been made, and are being made to determine the original home of the San José Scale. Ever since its dread presence in the eastern portion of this continent was detected in 1893, entomologists and practical fruit-growers have been anxious to secure a natural remedy—one which would keep the Scale in check, as the imported lady-bird from Australia now keeps the Cottony-Cushion Scale in subjection in California. Any doubt as to the realization of such a wish should not prevent a search for the native home of the Scale, for it would appear that there the pest is kept under control by some agency. To determine this controlling factor and to introduce the factor into this country is thus the object of the laudable efforts to locate the home of the San José Scale.

For many years after the California orchards were first attacked, it was supposed that the Scale had been introduced from Chili, for it was discovered in that country in 1872; but later investigations in Chili showed pretty conclusively that the Scale was not a native, but an introduced insect. So this theory was in time abandoned.

Next, Prof. J. B. Smith suggested, in 1896, that the native home of the San José Scale was probably in one of the Northern Pacific States. This theory was, however, never very seriously entertained by many of our best entomologists, and was also soon abandoned.

Japan was next pronounced the home of the Scale, and many evidences seemed to point to its introduction from that country: 1. The agents of the quarantine station in California found Scale on nursery stock imported directly from Japan; 2. Mr. Kuwana, a Japanese student at Stanford University, California, found the Scale so widely spread throughout the Japanese Empire that he came to the conclusion that his native land was also the native land of the San José Scale. He announced, moreover, that the Scale was there kept in check by certain parasites and lady-birds.

Following immediately in Mr. Kuwana's important announcement, Dr. Howard, chief Entomologist at Washington, sent Mr. Marlatt early last summer to Japan to investigate the conditions there, and if possible, to bring back to America some of the parasites and predaceous insects which were instrumental in keeping the Scale in check.

At a recent meeting of the Biological Society at Washington, Dr. Howard stated that he had just received a letter from Mr. Marlatt announcing that the original home of the San José Scale was not in Japan, but in that region of China immediately south of the Great Wall, and that a consignment of living lady-bird beetles which were found preying on the Scale in China, was on its way to America.

I am sure it is the ardent wish of every fruit-grower that these lady-bird beetles may arrive in a healthy condition, and begin work immediately on Scale-infested orchards.

2. *The Haseltine Moth-Catcher.*

This moth-catcher has been widely advertised as a codling-moth destroyer. To test the merits of the moth-catcher, I had two of them placed in the College garden among apple trees. They were kept burning every night, with but a few exceptions, from June

7th to Sept. 7th. The insects captured were taken out and identified every morning.

Following is the result of the captures :

Decidedly beneficial insects	Inchneumon Flies were	70	% of all taken.
	Lady-birds "	$2\frac{1}{4}$	" " " "
	Ground beetles "	$1\frac{1}{2}$	" " " "
Dung beetles	"	6	" " " "
Mosquitoes	"	5	" " " "
Fire flies	"	$2\frac{1}{2}$	" " " "
Crane flies	"	$1\frac{1}{2}$	" " " "
May beetles	"	5	" " " "
Squash bug	"	2	" " " "
Cucumber beetles	"	$2\frac{3}{4}$	" " " "
CODLING MOTHS	"	0	" " " "

The inventor of this trap-lantern moth-catcher boasts that he sold over 40,000 during the past season. If all these were in operation for four months, probably forty millions of decidedly beneficial insects were captured and destroyed.

I find a great similarity in the results of my experiments with those of other entomologists at agricultural experiment stations in the United States. In every case, without exception, so far as I am aware, no codling moths were taken.

Prof. Webster, State Entomologist of Ohio, advises us Canadians to impose a specific duty of $5.00 on every Haseltine Moth-Catcher brought into this country, for he considers it not only an imposition, but a source of untold injury to the orchards of the country. W. LOCHHEAD.

THE KIEFFER SHIPMENT IN COLD STORAGE—I.

MR. WILSON'S REPORT.

DEAR SIR,—In reference to your inquiry regarding my recent trip to the Glasgow Exhibition, and also the experimental car load of fruit to the Scottish Commercial Metropolis, I beg to submit the following particulars.

I reached Montreal October 23rd. The car of pears packed by Mr. Murray Pettit arrived on the 24th in excellent condition, and were very carefully transferred by the agents of the Donaldson S. S. Line into the cold storage compartment of the S. S. Marina. The Government Fruit Inspectors (Mr. W. A. McKinnon and others) after examining these pears, expressed themselves satisfied with the fruit, and were pleased to observe that not a single package of the whole 600 was either bruised or broken. We left Montreal on the afternoon of the 25th, and from the time the cold storage compartment was closed until the arrival of the Marina in Glasgow (November 7th) the temperature of the compartment was taken every four hours, night and day, the highest register being 41 degrees, and the lowest 37 degrees. The pears were unloaded on the morning of November 8th, and on examination were found to be just a little riper than when packed. Very little of the maturing process having taken place during transit. With such a complete cold storage system as this I am certain the most delicate of our Canadian fruits, if carefully and properly packed, can be landed in Britain in "perfect condition" and command the highest price obtainable. Condition is everything, and the day these pears were exhibited for sale their appearance and perfect condition was so striking (not one pear being deteriorated) that buyers offered to take the whole shipment at prices fully 50 per cent. in advance of the figures at which the same variety of pears was selling, wrapped and packed in ordinary boxes or barrels. Messrs. R. & W. Davidson, Glasgow, to whom these pears were consigned, stating the quality, condition and appearance of the fruit was unprecedented in a shipment of this magnitude, and expressed great satisfaction at the size of the packages. Small

handy cases containing 35 to 40 lbs. of fruit are what every dealer wants. Twenty people can afford to buy a small package to the one who can afford to purchase a barrel, and as the majority of the packages are barrels, the one buyer has the advantage over the twenty, and the competition being so much reduced the man who can buy and pay for the barrel practically controls the whole market. As far as I can see, the shipper who uses small neat attractive packages, and packs only first-class fruit into them, cannot fail to come out ahead. As I do not wish to encroach too much on your valuable space at present, with your permission I will follow up this subject a little further in your next issue. I am, Sir, yours truly,

London, Ont. WM. WILSON.

SIMPLICITY IN TABLE DECORATIONS.—Elaborate and expensive floral centrepieces are not necessarily the most beautiful. Simplicity often rules the worlds of art and nature. Who would consider as beautiful, at first thought, a few sprays of the leafy growth of the garden asparagus together in a small vase with a like number of golden coreopsis? The effect is charming if the vase also be simple. This should be remembered, that a vase of flowers is intended to display the beauty of the flowers and not man's handiwork in molding or coloring the vase.

The umbels of white flowers of the wild carrot are very pretty in vase decorations, yet how few persons would think of gathering them for that purpose!

While it is a benefaction to man to have at command, for use and proper enjoyment, all the beautiful things possible, it is foolishness to trample aside a host of pleasing things, merely to strive for the elusive and unattainable or imaginary beauties. The writer does not lack praise for rare beauties, but rather deplores the tendency to look over and beyond Nature's abundance in the fields and along waysides.

Did you never pull a flower of the wild carrot? The tenacious fibre of the stem requires a pull. Never smell of its peculiar fragrance—if fragrance it may be termed? Note the odd, concave form of the umbel,—like a good-sized butter-plate.

There is much in Nature for us to learn and appreciate, and in our observations we come to know her better, we learn to love her, and that feeling will embrace our fellow-men. Let us, then, bring her simplest charms to our hearts and homes, without fear of missing something more rare and more beautiful beyond.—*Meehan's Monthly.*

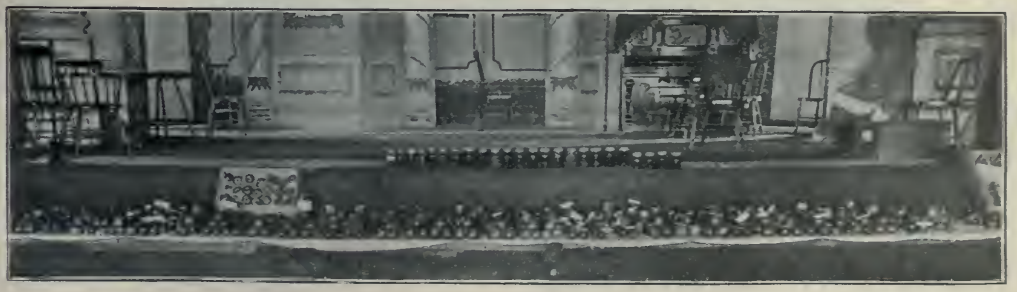


FIG. 2204. THE FRUIT EXHIBIT AT THE COBOURG MEETING, WHICH INCLUDED A COLLECTION OF APPLES GATHERED IN 1900, AND PRESERVED IN COLD STORAGE IN EXCELLENT CONDITION.

FIG. 2205. SHOWING GROUP OF OFFICERS AND MEMBERS OF THE ONTARIO FRUIT GROWERS' ASSOCIATION AT THE ANNUAL CONVENTION, COBOURG, DEC. 4, 5 AND 6, 1901.

THE COBOURG MEETING A MAGNIFICENT SUCCESS.

FIG. 2206. MAYOR E. C. S. HUYCKE,
Who gave our Association a hearty welcome to the Town of Cobourg, and took a deep interest in the meetings.

NEVER in the history of our Association was there so great an attendance or so deep an interest taken in our meetings as at our recent convention at Cobourg.

The day meetings in the Court room were attended by nearly 200 people and the evening meetings in the Opera House were crowded to the doors.

The morning meetings were devoted to business, the afternoon to educational topics on the growing and marketing of fruit, and the evening sessions were of a popular character.

HONORARY DIRECTORS.

Under the first head an innovation was introduced by making Mr. Thomas Beall and Mr. A. M. Smith, honorary directors in view of their long and excellent services rendered to this Association, the former having been instrumental in organizing about sixty affiliated Horticultural Societies and the latter being the only one with us of the Constituent members.

OFFICERS.

The following are the officers for 1902 :— G. C. Caston, president; W. H. Bunting, vice-president ; R. B. Whyte, W. A. Whitney, Harold Jones, W. H. Dempsey, Major Snelgrove, Elmer Lick, M. Pettit, E. Morris, J. S. Scarff, W. W. Cox, T. H. Race, Alex. McNeill and C. L. Stephens.

SAN JOSE SCALE.

The San Jose Scale was reported on by Mr. G. E. Fisher, the official inspector. This pest had not appeared in any new localities owing to the vigilance exercised by the Department of Agriculture, but in places where it was already established and neglected the condition of things was most alarming.

Crude petroleum has proved the most effective spray for apples, pears and plums in treating the scale ; it might not entirely

FIG. 2207. RESIDENCE OF MAYOR HUYCKE.

FIG. 2208. J. D. HAYDEN,
President of Cobourg Horticultural Society, who was present and took a prominent part in our meetings.

eradicate it, but it would not spread, and the trees could be kept healthy and in a condition for bearing clean fruit. For the peach tree the whale oil soap was still recommended, because it was easily injured by the petroleum.

As to the cost of material, the latter was much the cheaper. To treat a full grown peach tree for example with soap cost about twelve cents, while to treat the same tree with crude petroleum would only cost about two cents.

Fumigation of orchard trees has been tried, and was a complete success in killing the scale, but it was very difficult of application and rather expensive.

The discussion culminated in the following resolution :

In view of the fact that the San Jose scale act is not being enforced, and that in many fruit growing sections where the interests are large and very little, if any of the scale exists, it is desirable that the growers have government assistance to protect themselves against this pest.

Therefore, Resolved that the San Jose Scale committee be authorized to urge upon the government the importance of enacting permission to legislate on the lines of the following memo :—

1. It shall be a punishable offence for anyone to neglect to eradicate the San Jose Scale at once when it is located and brought to the attention of the owner,

(*a*) by burning the infested trees,
(*b*) by fumigation with hydrocyanic gas,
(*c*) by spraying with crude petroleum,
(*d*) or by such other means as may be recommended by the Department or its officers from time to time.

2. That any township must, on the petition of fifteen rate payers, appoint an inspector or inspectors, whose duties shall be to thoroughly inspect all fruit trees subject to San Jose Scale in the township, and see that the scale is eradicated where discovered.

3. That the inspector shall be paid one third by the township, and the balance by the province.

4. That the said inspector is to be liable for neglect of duty.

5. That the Provincial inspector shall supervise the township inspectors, direct them, and see that they are doing their work in the most effective and economical manner, and see that they make thorough inspection and that they secure the carrying out of the law.

6. That the Government supply suitable material for spraying on the same terms as has been done during the past season.

HORTICULTURAL INFORMATION.

How best to educate fruit growers throughout the province in the best methods of horticultural practice was discussed, and a resolution passed asking the Provincial

FIG. 2209. "THE MAPLES," RESIDENCE OF SENATOR KERR.

FIG. 2210. MAJOR H. J. SNELGROVE,
Governor of the County Gaol, who was elected one of our Directors for 1902 at the Cobourg meeting.

Minister of Agriculture, to issue a series of practical bulletins on the first principles of fruit growing. Attention was directed to the series of articles entitled " First Lessons in Fruit Growing" by Prof. Hutt of the O. A. C. Guelph, which are now to appear in the Canadian Horticulturist.

If this publication could be more widely distributed among our farmers it would itself constitute an excellent medium for such information.

FREIGHTS ON FRUITS.

The Transportation Committee brought in a report, which, while thanking the companies for the small concessions made to fruit growers, regretted that there was still much reason for complaint, because rates on fruit were so much higher than on other commodities, thereby crippling the fruit industry and which stated that while requests had been once more presented to the railways for concessions which were considered just and reasonable, they had been again refused. It was recommended that the matter be followed up still further, and in the meantime every effort be made to gain information and strengthen the position of the committee, so that sufficient pressure might be brought to bear to secure relief from unjust discrimination against the fruit trade.

Also requesting the Government to continue the valuable assistance already rendered in connection with the export trade in fruit.

This report was practically laid on the table and superseded by the following;

That various committees and deputations from this Association and from other bodies of fruit growers have from time to time laid before the Railway authorities the injustice of the freight rates and regulations affecting the transportation of fruit; that the railway authorities have invariably received such deputations with the greatest courtesy and have quite as invariably refused to grant any but the most meager concessions; that your committee see no reason to hope that any rates less than "what the traffic can bear" will be voluntarily conceded by the railways; that the Dominion Parliament is the only authority in the country with the power necessary to compel transportation companies to do justice to the public;

FIG. 2211. "HEATHCOTE."
Property of Mr. W. F. Ladd, of Galveston, Texas; at present occupied by Mrs. (Gen.) Grant, of New York City.

FIG. 2212. SENATOR KERR,

who gave our Association a public address of welcome. The Hon. Wm. Kerr, K. C., is a B. A. graduate of Victoria of 1855, and LL. D. in 1887. He was Mayor of Cobourg in 1867, created Q. C. in 1876, called to the Senate of Canada in 1899.

that your committee therefore recommend that the Government of Canada be memorialized to appoint a Railway Commission without delay to fix reasonable rates for the carrying of goods by freight and express, and to provide for the enforcement of the rates and regulations made by such Commission by the most summary and simple process possible, with heavy penalties for all infringement of such rate and regulations.

A new committee, consisting of Messrs. H. W. Dawson, of Toronto, R. W. Graham, of Belleville, and E. D. Smith, M. P., of Winona, was appointed to push the matter of Railway Legislation.

PRACTICAL SUBJECTS.

Among the educational and practical subjects discussed in the afternoon meetings was the Fruit Marks Act. Prof. Robertson stated that so far the work of the inspectors had been educative but that, hereafter, persons transgressing the Act would be prosecuted.

Mr. H. N. Hutt of Southend, one of the speakers on fruit topics at Farmers' Institutes gave an excellent address on Pruning, which we give elsewhere in full.

The addresses of Prof. Saunders on the work of the Dominion Experimental Farms in producing hardy fruits, and Prof. Macoun on the American and Nigra plums are of much value, and will appear in full in our report, which will be published earlier than usual.

POPULAR SESSIONS.

At the evening meeting on Wednesday addresses of welcome were delivered on behalf of the town of Cobourg and the united Counties of Northumberland and Durham by His Worship, Mayor Huycke, Senator Kerr, Mr. McColl, M. P., of Cobourg, and that most active and enthusiastic fruit-grower and shipper, Warden Rickard, of Newcastle; all these gentlemen united in giving the Association a most cordial welcome to this beautiful town. Mr. T. H. Race, of Mitchell, responded in a most happy manner. These gentlemen were followed by Prof. H. E. Van Deman, of Washington, D. C., and Prof. J. W. Robertson, of Ottawa, who held the attention of the large audience until a late hour.

On Thursday evening Mr. C. C. James, Deputy Minister of Agriculture, gave a valuable address on the possibilities opening out before young Canadians, and emphasized the fruit industry in this respect. He was followed by Mr. G. C. Creelman, Superintendent of Farmers' Institutes, on "Our Horticultural Societies; their relation to the Home, School and Province. Rev. Father Burke gave a very interesting account of the fruit interests of Prince Edward Island.

The list of gold and silver medals won at the Pan-American Exposition was then read

by Mr. Bunting, and the interest manifested by the audience in the local people who had been successful was very marked. Prof. Waugh concluded a very profitable evening with an illustrated address upon fruit buds and their development. The local band enlivened both evening sessions with some very fine selections."

QUESTION OF CHERRY PLANTING.

IN an article in the Central Farmer, E. F. Stephens, Crete, Neb., says :

"We now believe that commercial orcharding with the cherry will not be nearly as profitable during the coming ten years as it has been during the last twenty. The cherry is so easily grown and fruits at such an early age that it is not difficult to overstock the market, and at this moment we are inclined to wish that one-half of the 3,000 cherry trees in commercial orchards were apple, peach or plum trees.

"During the last five years we think the majority of planters, in many Nebraska districts, have planted almost as many cherry trees as apple trees ; and that when all these trees come into bearing, those who do not have an excellent local market may find it difficult to sell all the fruit at a profit. We have in mind a cherry orchard in the central portion of the state containing 5,500 trees, and we know of a large number of orchards containing from 500 to 1,000 trees.

"The fruit of the cherry must be marketed in a few days, and will not stand shipment to any great distance. The fruit of the apple, on the other hand, can be kept for long periods, and has more nearly a universal demand.

"As long as cherries like the Early Richmond, Montmorency and English Morello can be sold freely at from $1.25 to $1.50 per bushel, there is good profit ; but when they drop to $1 a bushel or below there are better returns in raising other kinds of fruit.

TOBACCO IS THE BEST INSECTICIDE.—Most of the insects common to house plants dislike tobacco as much as does the cleanly housewife. The best way to use it as an insecticide upon window plants is to secure a good handful of tobacco stems, place them in an old basin, pour boiling water upon them, and let them stand for several hours. Then drain off the liquid into a basin or tub deep enough for immersing the tops of your plants in, and dilute it with warm water until it shows only a faint tint of brown. Then take up the plants one at a time, and hold them, tops down, in the water, washing them clean.—*Ladies' Home Journal.*

CLOSE OF THE GLASGOW EXHIBITION.

NOW that the Glasgow International Exhibition is a thing of the past, the grounds deserted and the beautiful exhibition buildings littered with packing cases and packing material and all the debris that accompanies a removal, it may be well for us to look back and take stock, as it were, of our own share in it. And I may say at the outset, that visitors to the exhibition, repeated many times over that the Canadian Pavilion was the most attractive part of the exhibition. And, although one may understand that what is said to one's face may partake of the nature of flattery—that although the people of North Britain may not have kissed the *Blarney Stone*, they may nevertheless blaw in yer lug a wee, and that a grain of salt ought to be added to praise of your own work, etc. Yet I think we ought to give our friends on this side credit for sincerity even though we had no other reason for taking their word. But it is a fact that many of our staff have heard time and again the praises of the Canadian exhibit from the good natured crowd when it was not known that there was "a chiel among them taking notes," and who might print them.

As the immense crowds of people passed through our building we could not help overhearing their remarks on the various items of our exhibits and I may say without any hesitation that they were invariably complimentary to Canada and the Canadians, though occasionally we had to listen to a little good natured chaffing.

Some of the agricultural implements were absolutely new to thousands of visitors, many clever farmers amongst the number. From amongst the larger implements there was the Disk harrow, the Spring tooth harrow and the Hay loader. Among the small implements that seemed to catch the eye was the two-wheeled hand hoes, exhibited by Wm. Ewing & Co., Montreal. These were closely examined and much admired, but many of the farmers said that the soil of Scotland was too coarse to permit of their use there.

But I am sure you will prefer to hear something of our own special exhibit, namely, the fruit. It was not a very large display, nor was any great expense incurred in setting it out. Nevertheless, it was the centre of attraction in the Canadian Pavilion. Whatever one might miss, no one was willing to miss the fruit. The remarks made upon it were, to us who are accustomed to the magnificent displays made in almost any Ontario town, or in the eastern townships, not to speak of Toronto or Montreal, to say the very least, extravagant.

Thousands of people of all classes said it was the finest they had ever seen, and when they found that it was a year old, and had sampled it, and found it almost equal to fresh fruit, perfect in texture and flavor, they marvelled.

Our exhibit of fresh fruit, i.e., fruit in the natural state, was composed almost entirely of apples. The only exceptions were a few plates of pears, unnamed, that came in one of the Nova Scotia cases

As a general rule the apples were not of unusual size, but were very even in size, and most of them of beautiful color. The very large ones were Gloria Mundi, some wonderful specimens of Spys from Lord Aberdeen's orchard, at Vernon, B.C., Fallawaters and Ben Davis from Ontario and Nova Scotia, and I should not fail to mention some glorious Blenheim Oranges also from both Ontario and Nova Scotia. But it is hard to discriminate—almost all our fruit was excellent, and the way it held out to the very last, was a continual wonder. A question

that was asked daily throughout the summer was "How is it that we cannot procure fruit now like what we see here?" or "Where can we buy fruit like this?" It was necessary to explain to the questioners that the present system of cold storage which produced such splendid results, was comparatively new, and that, in a year or two, undoubtedly equally good fruit would be procurable in the summer months.

A frequent complaint from those who did appreciate the value of fruit for daily use was that in buying a barrel of apples for home use a great deal of loss was incurred from the bruised apples, that soon began to decay. Many declared that a quarter or even a half was lost before the barrel could be used, and when shown the forty pound boxes of sound apples, that were sent for our exhibit, they exclaimed that that was just the thing required to perfect the fruit trade. My own conviction is that the barrel is doomed as a marketing package for apples, at least for choice fruit.

The question of a perfect package is a most important one. If growers and packers could only realise the immense loss that is annually incurred by loose apples in barrels —slack, they call them here—they would endeavor to devise some other form of package. I went on several occasions to some of the large establishments for the sale and disposal of fruit, and when based on what I saw there, I say that the loss is *enormous*, I do not, in the least, exaggerate.

Let me here tell you something of the several kinds of cases in which our exhibition fruit was packed, and then you will understand better what the ideal package should be.

There was—first—the case in which the apples were wrapped in a single thickness of tissue paper, and filled up without any other effort to save the fruit from injury, and one lot of the very finest fruit was sent on in that way. It is needless to say that it reached us in bad condition.

The next was a case in which the apples were wrapped in two thicknesses of heavy paper, without any other separation. This fruit arrived in better condition.

Another lot was packed like the last mentioned, with a straw board between the layers of fruit, this lot arrived in fair condition.

A fourth lot came wrapped in double Manilla paper in separate compartments—in egg cases—and arrived in very good condition.

A fifth lot came in egg cases, in separate compartments and also arrived in very fair condition.

A sixth lot came in separate compartments—egg cases—wrapped in double paper, the inner paper waxed. These were in many cases perfect. As were also those in the seventh lot that were doubly wrapped like the sixth, but were packed in Excelsior. Several kinds in this last package were in almost perfect condition.

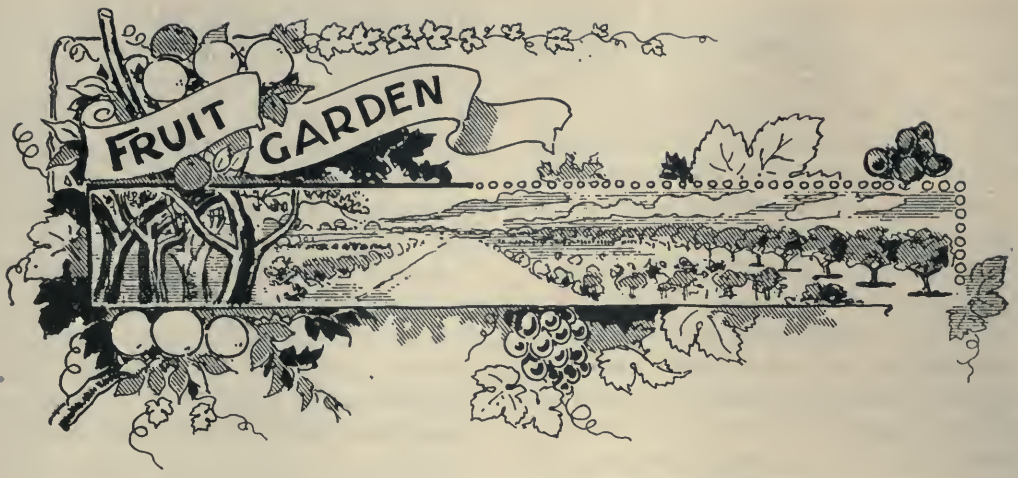
The sixth of these packages, i.e., the separate compartment case, with the apples wrapped in double paper, the outer wrapper, manilla plain, the inner one waxed, seems to approach the ideal package. If such a case could be supplied at a sufficiently low price, it would satisfy a general want and leave little further to be desired. I may say that the seventh seemed to be the favorite shape; it was about 22 inches long by 11 inches wide and deep. The other cases were generally 22 inches square by 10½ inches deep.

A package for plums and pears and peaches might be half the size of that for apples.

I was very much gratified to see the fine prices realised for handsome, well-packed apples just before All Hallowe'en. I saw some sell up to 32s. per barrel. Prices fell considerably immediately after Hallowe'en.

R. HAMILTON.

Glasgow, Nov. 21st, 1901.



FIRST LESSONS IN FRUIT GROWING—II.

THE STEM.

THE stem is that part of the plant which grows upward from the collar, bearing the leaves or branches. In some plants it is so short as not to be apparent, as for example, the strawberry. The length and nature of the stem determines very largely the character of the plant. Woody plants having apparently no stem, but which have the branches springing from the collar, like the currant and lilac, are called bushes or shrubs. Plants having a stem which twines or climbs for support, like the grape, or hop, are called vines. A plant worthy of the name of tree has a well-defined stem which supports the branches. When it is bare of branches for some distance from the ground, it is commonly known as the trunk.

STRUCTURE OF A STEM.

The study of a cross-section of the trunk of any of our forest or fruit trees reveals an interesting structure. In the centre will be seen the pith, next to this the heart wood and sapwood, and on the outside the inner and outer bark. But let us look into these more closely.

THE PITH.—The pith is a soft, spongy substance found in the centre of both stem and branches. In soft wooded species, like the elder or grape, it is comparatively large, while in hard wooded species, such as the apple and pear, it is quite small. In young shoots, it is soft and succulent, holding moisture like a sponge, but in the older parts of the tree it becomes dry and shrivelled, or may rot away altogether. Its use apparently, then, is to act as a reservoir to hold moisture in the young and growing parts of the tree.

THE WOOD.—The wood, which makes up the greater part of the trunk, is of two kinds. That on the inside is HEART WOOD. This is the older wood, which has become firm and mature by age. It is generally of a darker color than the sapwood surrounding it. In the walnut, it becomes a very dark, rich color, and constitutes the most valuable part of the tree.

The line of demarkation between the heart wood and sapwood is often quite distinct, but the annual increase in the heart wood comes from the gradual maturing and drying of the inner layers of sapwood.

Fig. 2213 (from Primer of Forestry, by Pinehot.) Cross-section of Black Oak. The silver grain, the rings of annual growth, and the dark heart wood and lighter sapwood are visible, and the line between the rough, corky outer bark and the thinner and lighter colored inner bark may be seen.

The heart wood is not essential to the growth of the tree, except to give it stiffening and strength. Old trees may often be found making good annual growth when the heart wood is rotted away, leaving the trunk quite hollow.

The Sapwood, so called because it contains the moving sap of the tree, is the outer or new wood next to the bark. It is softer and more sappy than the heart wood, and is usually easily distinguished from it by its lighter color.

The Fiber or Inner Bark, is a thin layer of bark next to the sapwood. It is composed of a number of layers of soft, flexible, but very tough fibers. In some kinds of trees it is much more prominent than in others. In the basswood it is quite plentiful, and at one time was used largely for strings in greenhouse and nursery practice, but the fibre of the Raffia palm is now used in place of it.

The Rind or Outer Bark, as it appears upon a young stem or branch is made up of three thin layers. On the outside is a soft green layer, which gives the green color to fresh growing shoots. On the outside is the epidermis, or cuticle, a thin, smooth, transparent covering like tissue paper. Between these is the corky layer, which does not show at first, but gradually develops as the wood ripens, and hides the green layer beneath it. This corky layer is at first usually of some shade of brown, and gives to the young wood its peculiar color, by which an experienced grower may readily distinguish varieties by the bark alone. The bark of the Northern Spy apple tree, for example, is a dark, reddish brown, while that of the Yellow Transparent is of a brownish yellow.

On the surface of the bark of young stems may often be noticed small oval spots or patches, usually of a different color from the epidermis. These are the lenticles, formed by a group of corky cells. In the cherry they are very large and prominent, forming horizontally on the trunk; on the apple they are smaller and more numerous and form perpendicularly.

THE SHEDDING OF THE BARK.

The bark retains these three distinct layers only for a short time. As the tree or branch becomes older, the corky layer gradually increases in thickness, and after a time bursts the epidermis, and be-

Fig. 2214. The deeply ridged bark of the locust (after Craig).

Fig. 2215. The Pear Stem. The bark beginning to roughen (after Craig).

gins to break up and fall away in scales. Each kind of tree sheds its bark in a manner peculiar to itself. The shape of the scales is due primarily to the arrangement which the lenticles take in the young wood.

The age at which trees begin to shed their bark varies greatly with different species. In the grape vine, the inner bark is renewed each year, and that formed the year before is thrown out in long shreds. The sassafras has rough bark in two or three years, while the sweet chestnut often retains its smooth bark for over twenty years. The bark of the beech never becomes scaly, because it begins early in life to fall away in granules.

The apple and pear trees usually show a scaly bark at ten or twelve years of age. Trees that have been well cultivated and cared for retain their smooth bark much longer than those which have been neglected.

THE KIEFFER PEAR.

NURSERYMEN will be interested in the following statement by the Rural New Yorker, in response to a query from Benton Harbor, Mich :

We have been watching the Kieffer pear closely in this market. A few years ago in New York, during its season, the push carts and fruit stands were well covered with it. Many were sold to eat out of the hand, and the result, nine times out of ten, was evidently a disappointment. Gradually the fruit has disappeared from these retail stands, until now it is rarely seen. This is good evidence that the buying public recognize it, and will not buy it for eating from the hand. We believe that its sale will be limited to the demand for canning purposes, and there are few better fruits for this purpose. In order to make sure we have asked some leading fruit dealers for opinions as to the future trade in Kieffers."

Stearns & Brothers, Baltimore, Md., state that the Kieffer does not bring the prices that other varieties do, and think that too many of them are grown. S. H. & E. H. Frost, New York, say : "The foreign demand seems increasing somewhat. This will help to relieve the market, and it may be that large increased production might pay many years to come."

Brown & McMahon, Philadelphia, say : "Our opinion is that the Kieffer pear business is very much overdone, and instead of planting more trees they had better cut some down." Archdeacon & Co., New York : "It may be very good for canning or cooking ; in fact, in the South it is a pear which they prefer to all others, probably because they have no others."

PRUNING THE ORCHARD.

PRUNING is a means to an end. In the practice of pruning there should be in the mind of the operator, some definite purpose in view. The kind of pruning will depend on the purpose for which the tree is intended, whether for wood, for fruit, for shade, or for ornamental purposes.

NATURAL PRUNING.—Trees under natural conditions are constantly being pruned. Every fall nature strips the trees of their leaves. This is their regular annual pruning. Besides this, there is a continual pruning of buds and branches. If every bud on a tree were allowed to develop, the tree would become a veritable brush-pile. The buds most favorably situated as regards light, get most nourishment, and the less favored become starved and drop off. The lower limbs of trees and those within the crown become weakened and die from lack of sunlight; then the wind, nature's pruning knife, comes along and removes the dead branch. In this way trees are constantly ridding themselves of useless branches, and the pruning so effected is undoubtedly a benefit to the branches that remain, aud to the general growth and improvement of the tree.

ARTIFICIAL PRUNING. The trees of the orchard by virtue of selection, hybridization and cultivation are in a highly specialized condition, and to be maintained so must receive special treatment. The fruit tree is in a sense a machine for manufacturing fruit, and intelligent pruning is one of the means by which it can be made to manufacture the most fruit of the best quality in the shortest time and to keep up the output for the longest possible period. A correct understanding, therefore, of this machine and all its working parts, is necessary to its most successful manipulation.

FIG. 2216. FIG. 2217.

FIG. 2216.—A painted wound almost healed over.
FIG. 2217.—Cross section of trunk of apple tree. (S)—Sapwood; (I)—Portion changing from Sapwood to Heartwood; (H)—Heartwood. At the outer end of the line is the thin cambium layer under the bark.

STRUCTURE OF THE TREE.—If the trunk of

FIG. 2218. FIG. 2219. FIG. 2220. FIG. 2221.

FIG. 2218.—The healing of a torn wound, also cut too long.
FIG. 2219.—A well-healed wound, the result of a properly made cut.
FIG. 2220.—Result of leaving a stub.
FIG. 2221.—Result of removing scions from grafted limb before the cut has been entirely healed over.

a tree, or a large-sized branch or root be cut through, it would show the bark, the light colored sap-wood and the darker central portion, or heart wood. Just between the bark and the sap-wood, if we could see it, is a layer of very delicate tissue known as the cambium.

CAMBIUM.—The cambium is the only tissue that retains the power of active growth. It can best be seen by removing the bark on some actively growing tree, and so sensitive is it that exposure to air will kill it in a few minutes. It appears as a soft slimy or doughy substance that can be scraped off with the thumb-nail. The cambium is a very delicate substance, easily affected by frost or wet, and may be easily crushed or torn. It is the giving away of the cambium that causes the bark to strip off from the wood. During the growing season, the cambium gives rise to a layer of wood on the inside and a layer of bark on the outside, and a thick layer of cambium is left between the new wood and bark to carry on the growth of the tree next year.

THE BARK.—In bark, nature has formed a perfect covering for the delicate cambium beneath. Being corky on its outer surface, the bark of a waterproof covering to keep in the sap and at the same time exclude external moisture from decaying the cambium. Bark being somewhat soft and spongy in its construction, contains considerable air, which, acting as a non-conductor of heat, serves the purpose as a dead air space in a building, and keeps the cambium from being frozen or dried out. From this it appears how careful nature is of the delicate parts of the tree, and in all our operations of pruning we should exercise similar care. The orchard should always receive the best thought and practice of its owner, and should never be left to the tender mercies of the hired man or the itinerant pruner.

THE WOOD.—The light-colored portion of the stem is the sap-wood. It is through this that the sap containing its dissolved mineral elements, finds its way to the leaves. In the leaf the watery portion of the sap is evaporated, and the remainder, under the action of light, is combined with the carbon-dioxide of the air, and returns downward through the cambium to be used up in growth. The darker portion of the stem is the heart-wood, which is dead tissue, whose only use is to give support to the tree.

THE ROOT.—The root presents the same appearance when cut across as the stem,

and may for present purposes be considered as simply the branched extension of the stem underground. The cambium of the stem is continuous with that of the root, and is covered and protected with bark, except at the growing points. The covering of bark, being as was said before, impervious to moisture, requires that all water absorbed by the plant under normal conditions, be taken in at the root tips. In order to facilitate the easy and speedy passage of moisture into the plant, we have the small hair-like bodies known as root-hairs.

ROOT-HAIRS.—Root-hairs may best be seen on some seedling plants such as beans,

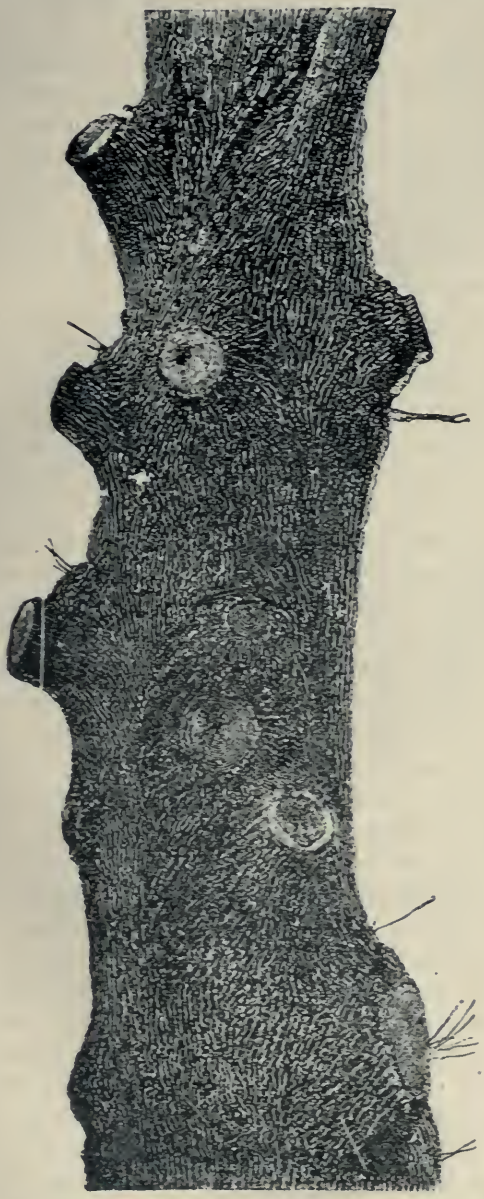


FIG 2222.—Oak tree from which some of the lower limbs have been properly cut and most of the upper ones improperly cut. (By permission from U. S. Year Book of Agriculture, 1895.)

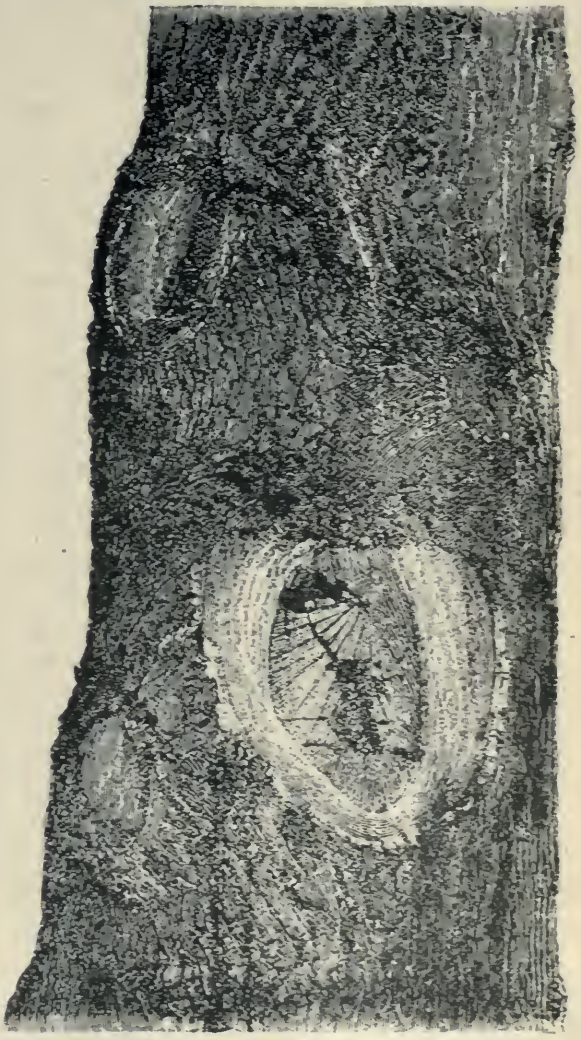


FIG. 2223.—Decay caused by the cutting of too large a limb. (By permission from U. S. Year Book of Agriculture, 1895.)

yet every plant has them in thousands. Like the cambium, the root hairs are so delicate that drying for a few minutes will kill them. It is the destruction of the root-hairs that makes successful transplanting so difficult. If trees could be taken up and planted again without the loss of root-hairs they would never know that they had been moved. This, however, is practically impossible except with the smallest seedling trees, yet it shows that too great care cannot be exercised in protecting the roots of trees during transplanting. It is owing to the heavy loss of fibrous roots with their root-hairs that make it so difficult, nay almost impossible, to transplant large trees. Most of the smaller roots with their absorbing root-hairs are cut away, and the large roots on account of their thin bark have little power of producing the hairs. The leaves on coming out evaporate the sap from the tree, and since there are but few root-hairs to take up moisture from the soil, the tree dries up and dies.

Pruning for Transplanting.—It is a good practice in the transplanting of large trees, or indeed of any tree, to cut back the large roots the year previous to taking up, so as to cause the tree to send out nearer the trunk, a strong growth of fine roots, which will be removed when the tree is dug up. Since more or less roots are cut or broken off in transplanting, the top should be cut back proportionately with root. All broken or decayed roots should be cut back to fresh healthy tissue, otherwise they become a source of disease. Roots pruned smoothly without injury to remaining tissue will callus over quickly and send out a good growth from the callus. For this reason the rooting of layers can be hastened by cutting away the bark on one side and exposing the cambium to the soil so that a callus is formed.

Forming the Young Tree.—As soon as the young tree has become established after transplanting, the formation of its top will commence. When the head of the tree is once formed the trunk does not lengthen, so that the lowest limbs must be started at the height we wish them to be in the mature tree. On account of ease in picking the fruit a low spreading head used to be considered most convenient. Of late years, however, the greater frequency of cultivation and driving back and forward in spraying, make the high formed head most convenient. Upright growing varieties such as the Spy may be started lower than trees of crooked or drooping growth such as Greening or Roxbury Russet.

Number of Main Branches. — Trees should not be started with too many main branches, as afterwards they thicken up and crowd each other and make it necessary to cut out very large limbs. As nearly all of the food of the tree is made by the leaves, the removal of a large limb with a great deal of foliage is a blow struck at the vigor and longevity of the tree. Trees so pruned suffer a process of starvation till the normal foliage is again restored, while the large wounds are a source of disease to the tree.

Ideal Pruning.—The ideal pruning consists in removing not branches but buds, not in checking growth but in directing it. It is easier and also less shock to the tree to pinch off buds here and there, than a few years later to saw off large misplaced limbs. Trees should be so formed and shaped when young that in later years trimming should be only slight, and it would never be necessary to cut out large limbs. Three main limbs started at different points so as to evenly distribute their pressure on the trunk, will make a well formed head. Opposite crotches are to be avoided, particularly in peach and plum trees, for when the limbs are heavily loaded the trunk is apt to split down by the wind and the tree is practically ruined.

Pruning for Fruit.— Trees have two

natural methods of reproducing themselves. The first is by means of shoots or buds; this is known as the vegetative reproduction or reproduction by growth. Every bud on a tree if placed under proper conditions, as is done in the practice of grafting or budding, is capable of producing a tree like the one from which it was taken. The other method of reproduction is by the seed of the fruit. If the tree is growing a great deal of wood it produces little fruit and *vice versa*. The skill of the pruner is required to maintain the proper balance between the reproduction by growth and by fruit. If one kind of reproduction is getting too much the start of the other, it is only necessary to check the predominant one. If trees are pruned in the growing period, growth will be checked and fruiting stimulated. Summer pruning should be mostly confined to heading back too fast growing branches. If, on the other hand the centre of the tree is thinned out, the fruit-bearing branches are removed, and the energies of the tree are again forced into wood growth. The growth of the tree might also be checked by stopping cultivation and sowing the orchard to some clover crop, or the plow might be made to run a little deeper so as to cut off the surface feeding roots, and root prune the tree.

Pruning for Wood Growth.—Pruning for vegetative wood growth is that which has been outlined for the young growing tree. Cut out all dead, broken and deformed limbs and those which cross or rub one another. Care should be taken to keep the tree free from suckers, so that there is a free circulation of air through the tree, and the sunlight is let in sufficiently to give the fruit a good color.

Healing of Wounds.—Limbs to be removed should be cut off as smoothly as possible with a sharp saw, and as close to the main stem as possible. When a limb enters a shoulder at the trunk, the cut should be as close to the shoulder as possible, yet never through it. There should never be any stump left because the cambium dies back, and when the stump decays there is a hole left which is apt to cause the trunk of the tree to rot and become hollow. Pruning shears are bad tools, as they pinch the bark and injure the delicate cambium beneath, and a badly healing wound is the result. Torn wounds are a source of danger

Fig. 2224.—Soft maple, cut back, giving the undesirable effect of a brushpile on a hop pole in winter, and a haycock on a gate post in summer. (By permission from U. S. Year Book of Agriculture, 1895.)

to a tree. If large limbs are to be removed, which should never happen in good pruning, there is a danger of the weight of the limb tearing the bark. To avoid this cut from below first and meet this cut with one from above, or if this cannot be done cut off the limb a foot from the tree and remove the stub. Large wounds should be smeared

over with tar or thick paint to keep out moisture.

TIME TO PRUNE.—It is very important that the healing process should start soon after the wound is made, otherwise the cambium will be killed back quite a distance from the exposed surface and healing will be retarded. For this reason winter pruning should be avoided, particularly in frosty weather. In the early fall or late spring, the cambium is active, and wounds made at this time start to heal at once, and there is little or no dying back of the cambium.

Southend, Ont. H. N. HUTT.

NO. 1 AND NO. 2 APPLES.

IN the discussion of the Fruit Marks Act at Cobourg, it was plainly pointed out that more definite grades were needed. As it now stands a shipper may use any designation he chooses to mean No. 1, or No. 2, and the inspectors are often at a loss to know just what is meant by such marks as A. B. Straight Grade, X, XX, Selected, Choice, etc.

Now if some designation were adopted for general use, and persons desiring to use other marks than that legalised were obliged to have such marks defined and registered before using them, it would much simplify the work of the inspectors.

Another point still undecided is whether the grade No. 1 or No. 2 should include certain definite sizes. If this were possible the grades would be much more satisfactory to the buyer, who would at once know whether his No. 1 apples were 2 inches or 2½ inch apples, a most important point; they would also be much more service to the grower, who would find his apples would take on more value in the markets because of the sizes indicated by the grade. Surely no apple except Fameuse, Pomme Grise, Jonathan, Lady or Wine Sap, should be classed No. 1 unless it were 2½ inches or upwards in diameter; or No. 2 unless it were at least 2¼ inches in diameter.

In these matters it is most important to be in line with other exporters from this continent, and it will therefore be interesting to quote from the proceedings of the North American Apple Shippers' Association the following resolution on the grading of apples:

Resolved, that the standard for size for No. 1 Apples shall not be less than two and one-half inches in diameter, and shall include such varieties as Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size. That the standard for such varieties as Romanite, Russett, Wine Sap, Jonathan, Missouri Pippin and other varieties kindred in size shall not be less than two and one-quarter inches. And further that No. 1 Apples shall be at time of packing practically free from the action of worms, defacement of surface or breaking of skin; shall be hand picked from the tree, of bright and normal color and shapely form.

No. 2 Apples shall be hand picked from the tree; and shall not be smaller than two and one-quarter inches in diameter. The skin must not be broken or the apple bruised. This grade must be faced and packed with as much care as No. 1 fruit.

THE GEORGIAN BAY FRUIT GROWERS' ASSOCIATION comprises a large number of the best fruit growers and farmers of the district. They were represented at our Cobourg meeting by Mr. Saunders, Mr. Cox and others, who were most anxious that the next meeting of our Association should be at Collingwood, but in view of the invitation from Walkerton, which has been repeated three successive years, they waived their claim for the present.

FERNS FOR THE HOUSE.

THE delicate and tender nature of many of the prettiest and most graceful growing varieties of this beautiful and interesting class of plants, prevents their being used very extensively for house decorative purposes. The dry, arid atmosphere of dwelling houses induced by artificial heating, more especially in winter, being particularly destructive to the delicate texture and formation of the fairy-like fronds of many varieties of ferns.

Ferns thrive best in a moist, humid atmosphere, and although these conditions cannot be given them to the same extent in a dwelling house as in a conservatory or greenhouse, or even where ferns are found growing amidst their natural surroundings, still much pleasure and satisfaction can be obtained by selecting suitable varieties, and by modifying as much as possible the unnatural conditions that surround all plant life in a dwelling house. In fact many varieties can be kept fresh and bright looking, grown as house or window plants, much longer than many varieties of foliage plants commonly used for house decorative purposes.

It would be a waste of time and energy to endeavor to grow the delicate Adiantum and similar tender species of ferns under ordinary conditions in a dwelling, or even in a window, the finely formed lobes of their tender fronds being particularly susceptible to the dry atmosphere, if even they succeed in making any progress at all in the way of growth.

Probably amongst the almost innumerable species and varieties of ferns known to floriculturists, there are none better adapted for house or window culture than the many types of the Pteris fern, sometimes called feather ferns from the close resemblance many of these ferns have to the formation of a large feather.

The long whip-like, half drooping fronds of Pteris serrulata, and the crested varieties of this Pteris, such as Pteris cristata and Pteris wimsetti, with the tips of their hard glossy green fronds more or less covered with the moss-like formation that give them the common name of crested ferns, are perhaps amongst the easiest grown and most enduring types of the Pteris, especially when grown as house or window plants.

Pteris cretica or Cretan Pteris is another variety that succeeds well in a dwelling house and is quite as easily grown as any variety of Pteris, in fact many prefer it to

FIG. 2225. NEPHROLEPIS BOSTONIENSIS.

Pteris serrulata or the crested varieties, as being less liable to attacks of fern thrip and red spider, the two latter being the greatest insect foes of fern life.

Another variety, Pteris hastata or Spear fern, specially commends itself to the indoor fern grower not only from the fact that it is quite as easy of culture and as capable of resisting insect attacks as the other varieties mentioned, but the pleasing variation in its habit of growth makes it particularly acceptable either as a pot plant, or in the make-up of a fern pan or fern dish.

The variegated type of Pteris cretica, viz.: P. cretica alba lineata, that takes its specific name (alba lineata) from the broad line of white that runs through the centre of each segment of its otherwise green fronds, is another variety that shows up splendidly amongst the plainer types of Pteris. In fact, in a well grown specimen, the white markings referred to often predominate sufficiently to make a plant of this variety quite a conspicuous object amongst a collection of ferns. The fronds of this fern are quite hard when matured, making it quite an easy task to sponge them occasionally to assist their growth, as well as to prevent attacks of insect pests.

All of the varieties of Pteris mentioned are of a comparatively dwarf habit, the tough leathery texture, as well as the glossy surface of their fronds making them specially suited for house or window culture.

Pteris longifolia succeeds well in a house, and retains its freshness for a long time, its stronger growing habit however making it more suitable for large collections of ferns, or for use in large jardinieres than for ordinary house or window culture.

The beautiful Pteris argyrea (Silver Pteris) is unfortunately of a very delicate nature and does not as a rule succeed well in a dwelling house or window. As a greenhouse or conservatory fern it cannot be ex-

FIG. 2226. ASPIDIUM CORIACEUM.

FIG. 2227. PTERIS ARGYREA.

celled in beauty, either in form or color, the broad rich silver markings of its large graceful fronds make it an object of attraction to all fern-lovers. It is seldom, however, that a perfectly grown specimen of this fern is seen, as it requires exceptionally good culture to produce a good specimen.

The Nephrolepis (Sword fern) gives us several types very useful as house or window ferns. The popular Boston fern (Nephrolepis Bostoniensis) is perhaps the most graceful, as well as one of the easiest of culture amongst ferns, its long arching fronds making it particularly adapted for furnishing large jardinieres, mantels, etc. Nephrolepis exaltata or the true Sword fern is also a useful house or window plant, but is not as robust as the Boston fern. The dwarfer growing types of this fern, N. cordata compacta, and N. phillipensis are useful ferns, but not as enduring or lasting in a house as N. Bostoniensis.

Another pretty and useful fern for house culture and one that until recently has been little seen, either as a house or window plant is the dwarf, dense growing Aspidium coriaceum or leather fern, deservedly taking the latter name from the extremely tough texture of its fronds as compared with many ferns. This characteristic enables this fern to resist the bad effects that a dry atmosphere produces on ferns for a much longer period than many others. Its dense, dwarf habit is also another feature that recommends it either for the window or greenhouse, or for house decoration. I have known plants of this fern retain their freshness for a longer period than many house plants such as palms and cordylines, without any extra care being bestowed on them.

The graceful growing Asplenium bulbiferum cannot be omitted from the list of ferns suitable for a window or for house decoration, but it succumbs sooner to drought and a dry atmosphere than some of the others I have mentioned. The long spear-like, hard fronds of Asplenium marinum (another distinct type of Asplenium) makes a most enduring and pretty fern for the house or window and is very easy to grow.

Amongst our native ferns that are espec-

FIG. 2228. PTERIS CRETICA.

FIG. 2229. PTERIS SERRULATA.

ially suitable for indoor culture is the dwarf growing Polypody. This fern is almost evergreen in character and differs but slightly either in form or habit from the English Polypody (Polypodium vulgare) both of which are most enduring ferns as house or window plants. I have used specimens of both the Canadian and English Polypody for house decorative plants for several years past, the plants having in almost every case retained their fresh bright appearance for two or three months without any more care or attention than is usually bestowed on the best house plants, viz.: Aspidistras, Cordylines, palms, etc., a fact that certainly placed them high in my estimation as house plants. It is easy enough to secure a plentiful supply of the native Polypody, as it grows freely in almost every part of Canada, more especially amongst rocks and stones. Used solely as an occupant of the fern pan or as a pot plant, or mixed in with other kinds of ferns, these varieties of the Polypody are a valuable addition to the list of ferns suitable for house or window culture.

Another stronger and coarser growing fern, useful for house decoration or for the greenhouse, is the Aspidum falcatum, or as it is sometimes catalogued Cyrtomium falcatum, another iron-clad fern capable of resisting for a longer period than most ferns the atmospheric condition unsuitable to plants, usually found in a dwelling house.

Many other varieties of ferns could be mentioned as being suitable for house or window culture, but those given will be found sufficient to make a variety to supply quite a large window or for house decorative purposes.

A word or two perhaps on the culture and care of ferns may perhaps be acceptable.

There are very few ferns but delight most of all in soil of a light, porous nature. A compost should be made of one-half well rotted, clean leaf mould, the other half to be made up in equal parts of sharp, fine sand and loamy potting soil, the latter being enriched with a small quantity of dry pulverized cow manure. Mix this compost well together before using.

From the fact that ferns like plenty of moisture at the roots and around about them, the mistake is often made of not giving the pots they are to grow in a plentiful supply of drainage. This latter feature is very necessary when potting ferns or filling fern pans, as ferns will not live, to say nothing of thriving, in a sodden soil soured by stagnant water, especially when placed in a window or dwelling house. Use fully an

FIG. 2230. PTERIS WIMSETTI.

inch of broken pots in all except perhaps very small pots, when the quantity of drainage can be reduced in proportion to the size of the pot.

Water ferns thoroughly at the roots when they require water, never allowing the soil to become anything approaching a dust dry condition, in fact with good drainage the soil should always be kept moist but not soddened.

When potting or re-potting ferns do not be too liberal as to the size of the pot; using a pot too large in proportion to the quantity of roots is detrimental to almost all kinds of plants, especially to house or window plants where the surroundings are not of a nature to induce quick root action so as to necessitate an abundance of room for the roots.

The fronds of most of the ferns I have mentioned can be easily washed with a small piece of soft sponge or some similar material, moistened with clean water. Syringing the growth with water from a fine atomizer spray will also be beneficial, or the growth of the plants may be dipped in a pail of water once or twice a week. This can be done by turning the plant upside down and allowing the fronds only to remain under water for a minute or so. By adopting these means before insects attack the growth, the destructive visits of the fern thrip and red spider can often be prevented and the plants kept fresh and healthy looking.

The insect pests that are most likely to prove troublesome are the fern thrip and red spider; the green fly often makes its appearance, especially on the young fronds. Shaking or brushing off the green fly is probably the safest way to dispose of green fly; if tobacco water is used it must be made very weak. The presence of thrip and red spider will be first seen by the whitish appearance the fronds present, especially near the centre rib of each lobe or frond. Weak tobacco water applied to the growth, especially on the underneath side, is the best remedy for thrip. The fern thrip is a very minute insect and cannot be discerned with the naked eye; a magnifying glass will however reveal its presence, when it will be seen burrowed snugly between the upper and lower layers of film that constitute the frond. Nothing is better for destroying thrip on ferns than frequent applications of tobacco water. Frequent syringing and sprinkling the growth of ferns with clean water is one of the best preventives of the attacks of the almost invisible but destructive red spider, one of the worst pests of indoor plant life.

Ferns have during recent years become so popular and necessary as accessories to floral decorations, that a word or two on their culture and care may perhaps be interesting to readers of the Journal.

W. Hunt.

Hamilton.

Japanese Fern Balls.—A novelty of recent introduction by our florists is the Japanese Fern Ball, an apparently dried up and lifeless ball of roots, which when soaked in water for fifteen minutes, every day for a few days, then hung in any desired position, growth soon starts, and it becomes a mass of beautiful ferns. All that is necessary afterwards is sprinkle occasionally. Or the ball may be cut in two, placing flat side down, thus getting two dishes of ferns. They may be allowed to dry up any time and started again by watering as before. If they prove to be anything like the introducers' description, they will be a most desirable and attractive novelty both for the window garden and table decoration.

THE NARCISSUS.

IN this genus we have a long list of established favorites, remarkable alike for the elegance, fragrance, and earliness of their flowers. In one respect the species are all alike ; they delight in rich soil made porous with plenty of sand and well-rotted manure. All of them are also quite hardy, and from the early period at which their flowers are produced, they are of the utmost consequence to the flower gardener.

Several of the species are bound to bear forcing well, and for this purpose have become a staple article in the Dutch florists' trade, and several varieties have been originated by them, suited by the selection of their parentage, to bear this trying course of treatment. The following are commonly grown for forcing : Bazelman Major, Soleil d' Or, Grande Primo, and Grande Monarque. These, with the double Roman and others, should be potted in September in a mixture of equal parts of fresh loam, rotted manure, and leaf mould, with half of either quantity of sand. In potting, the neck of the bulb should be kept above the surface of the soil, that the roots may have that much more space in the pot ; and when the rooting is completed they should be placed together, either in a cold frame or in some convenient place, so that they may be covered a foot thick with fresh leaves. These exclude light and prevent frost from getting to the roots, both an essential to a speedy excitement of root growth.

In about five or six weeks it will be found that many of them have filled the pots with roots, and these may be taken to a temperature of 55 degrees to bring on their flowers ; and if repotted when the first two leaves have grown a few inches, the flowers will be considerably larger ; but before any plant is taken from the bed of leaves, be sure that it has made a good stock of healthy roots, or it will be spoiled in the forcing process. Narcissi do not require a powerful heat to bring out their flowers (55 degrees will do it better than any other), and the supply of water should be sufficient but by no means excessive.

The Paper narcissus (*N. pdpyraceus*) is now, perhaps, more extensively forced than either of the above mentioned. It is grown in immense quantities by the florists of New York and other large cities, and next to the Roman hyacinth is the bulb most extensively grown for this purpose. When grown on a large scale it is planted in boxes of soil about five inches deep, at a distance of three to four inches apart, and treated as recommended above. This, like nearly all other bulbs, is of no value after being forced, and the roots may be thrown away.

When grown in the open borders the bulbs should be planted in October, in newly dug and well manured ground, at a depth of three inches, reckoning from the top of the bulb to the surface of the soil. This will not be too much for any, except the jonquils, which, from having smaller bulbs, may be placed an inch nearer the top. At this depth, and with plenty of manure about them water will not be required, but they will grow strong and flower finely. When planted in beds, and it becomes necessary to remove them to make room for other plants, it should be done as soon as their beauty is past. As the bulbs are by no means mature at this time, they should be "laid in " in some slightly shaded place until the foliage is quite withered, when they may be taken up, dried, and stored away until wanted for the next planting seson.

Most of the species are from the south of Europe, and are propagated by offsets. They were among the earliest cultivated garden flowers.—*Garden and Farm Topics.*

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

"COPY" intended for publication in The Canadian Horticulturist, should be addressed L. Woolverton, Grimsby, Ontario.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

NOTES AND COMMENTS.

THE NEXT MEETING of our Association will be held at Walkerton, near the home of Mr. Sherrington, our fruit experimenter for the Lake Huron District.

TOPWORKING THE NORTHERN SPY.—Mr. Geo. T. Powell, of New York, recommends the Spy as stock on which to graft or bud other varieties, because its wood is so hard and fine grained. He has been grafting on it scions of King and Jonathan with excellent results.

THE JOURNAL.—The editorship of this Journal remains in the hands of Mr. L. Woolverton who hopes to be able occasionally to attend meetings of Horticultural Societies and Farmers' Institutes, and to visit the various fruit growing sections of the province, and thus gather material to very much increase the value of this publication.

A REPORT OF THE KIEFFER SHIPMENT.—Mr. Wm. Wilson, the inventor of the new Canadian fruit package accompanied a car lot of them to Glasgow packed with Kieffer pears. He reports that the officials of the Donaldson Line gave him every opportunity to test the temperature of the cold storage chamber as often as he chose during the passage over, and he found it quite satisfactory, standing between 37° and 41° during the whole voyage.

He was kindly received by the consignees, who sold his cases of Kieffers at 6s., 7s. and 8s. for the 112 pear grade. This case weighs thirty-two to thirty-five pounds, while the half case we have been using weighs about twenty-seven pounds. These sales seem to indicate a decided advantage for the new case. The outside measurement is 21½ x 10¾ x 12½ inches, and the pears be so arranged that any sizes will fit the

trays, and the outside packages will always be uniform. The fruit arrived in perfect condition. The consignees advise holding over pears until about the middle of November, because the best prices are obtainable in December, and cold storage charges here are less than in England. Bartletts, Howells and Anjous should all carry well and bring good prices, especially the Howell, which received many words of praise, as one of the cleanest and best of export pears for us in Ontario.

Away with Bill Boards.—What a disgrace to our fair country that those huge bill boards, advertising quack medicines, tobacco and other goods, set in the midst of otherwise beautiful views of rural scenery. Surely it is time that our people who have good taste should arise and seek legislation that will prevent such defacement of our beautiful country.

The American Park and Out-door Association, of which Mr. W. H. Manning, landscape architect, Boston, Mass., is secretary, is making determined efforts to create public sentiment adverse to such abuse in public advertising.

A Bill has been introduced to the Legislature of Illinois of which the following are the provisions:—

Section 1. That no person shall paste, stick up, paint, brand or stamp, or in any manner whatsoever put upon or attach to any building, fence, gate, outbuilding or grounds of any of the charitable, educational or penal institutions of the State of Iilinois, or upon any property belonging to the State of Illinois, or to any County or Township therein, any written, printed, painted, or other advertisement, bill, notice, sign or poster.

Section 2. That no person shall paste, stick up, paint, brand, stamp, or in any manner whatsoever put upon and attach to any building, fence, bridge, gate, outbuilding or grounds of another, without first obtaining the written consent of the owner and also of the person in possession or accupancy thereof, any written, printed, painted, or other advertisement bill, notice, sign, card or poster.

Section 3. Any person violating any of the provisions of this Act shall be guilty of a misdemeanor and, upon conviction thereof, shall be fined in a sum not less than Three (3) nor more than Twenty (20) Dollars; and such written, printed, painted, or other advertisement, bill, notice, sign, card or poster is hereby declared to be a public nuisance, and may be removed or obliterated and abated by any person.

Section 4. The provisions of this Act shall not prohibit any person from posting or putting up any notice required by law or order of any Court to be posted or put up, nor the posting or putting up of any notice particularly concerning or pertaining to the grounds or premises upon which the same is so posted or put up.

Fig. 2231. Rev. A. E. Burke.

Rev. A. E. Burke, who came all the way from Prince Edward Island to meet with us at Cobourg, is a graduate of St. Dunstan's College and Laval University, Quebec, and is now Rector of Sacred Heart Parish, Alberton. He sets an example to the clergy in general, by the interest he takes in fruits and flowers, recognizing them as Gods's gifts, and worthy of our careful attention.

FIG. 2232. MR. THOMAS MEEHAN.

DEATH OF THOS. MEEHAN. On the 23rd of November last this eminent botanist and nurseryman passed away. His devotion to the interests of the parks, public schools and other civic interests of his town, and unselfish labors for the advancement of botanical studies, have already combined to make his name more enduring than brass or marble.

PRESIDENT J. W. BIGELOW of Nova Scotia and his excellent wife were at Buffalo, in the interests of a Nova Scotia exhibit of commercial apples. Of course the famous Gravenstein was most prominent. He pointed out to us several exhibits contributed by enterprising orchardists, as for example Mr. A. C. Starr, who has twenty six acres in apples, which yielded this season 2,500 barrels, and netted $8000, and who showed 84 varieties of apples and 20 of pears ; Mr. Herbert Johnson of Wolfville ; Mrs. Olivia Johnson of Wolfville, who is a graduate of the School of Horticulture, and who showed 30 varieties of apples ; Mr. Eliot Smith, who showed the finest King and Gravenstein and who prides himself upon growing the finest samples of these varieties in the world ; the Provincial Farm at Truro, which showed a fine exhibit of potatoes and some monstrous sugar beets, and S. Blair of Napanee Experimental Farm, who showed 60 bottles of fruit in good condition.

QUESTION DRAWER.

Clipping Evergreens.

1265. SIR.—How often and when should evergreens be clipped.
London. J. C.

Generally speaking, we would not advise clipping evergreens, unless to aid in bringing about a symmetrical habit of growth. The fantastic shapes of the topiary garden are curious, but nature's graceful branches are far more beautiful than the form of beer barrels, or pyramids.

Generally speaking, this work may be done at any season, and as often as the owner pleases, without much injury to the vigor of the tree ; but we usually prune evergreens in springtime just before the summer growth begins.

Club Root.

1266. SIR,—Kindly give cause of Club Root in cabbage and what will prevent or stop it?
Port Colborne, Ont. E. MILLIHEN.

Club Root is a disease peculiar to cabbage, cauliflower, turnip, and other plants of the same family. One of these, the shepherd's purse, one of our most common weeds, is

also quite subject to it. This disease is due to one of the low forms of fungus, known as a slime mould, which occurs as a slimy mass and gains access to the young roots causing the well-known malformations.

After the large club roots are formed, innumerable spores are produced and are set free by the rotting of the roots and are left in the soil, where they apparently remain indefinitely continuing the disease from year to year.

The only way to check the disease is by preventive methods, as remedies are unavailable after a crop is once infected. The best way is to follow a crop rotation in which none of the cruciferous plants, such as cabbage, cauliflower, turnips, or rape are grown on the ground for several years. If this is combined with clean cultivation, and no weeds are allowed to offer a host for the continuation of the fungus good results will follow.

It has been said that lime, used at the rate of 75 bushels to the acre, has been found effective in destroying the spores in the soil, but no reliable data upon this point are yet obtainable.

O. A. C., Guelph. H. L. HUTT.

Blight of Geranium.

1267. SIR,—I send you in a box two leaves of Angels Trumpet and some Ivy-Leaved Geraniums which are affected with a blight which is new to me. Am usually very successful with plants, and can manage the living creatures but don't know what to do with this. Sent for Ghishurst Compound and sponged with it once, but don't think it will do for from the larger of my two plants it has cut off every leaf and bud. This house is stone and we have sixty-five plants, and I am trying to do a little business in the plant line, there being no greenhouse here.

Would you please tell me what this blight is, and how to manage it. C. M. HURLBURT,
Manitowaning. Manitoulin Island, Ontario.

The leaves of your Ivy-Leaved Geranium are affected with a *leaf-spot* fungus known as Cercospora.

In the line of treatment, you should pluck all the diseased leaves and burn them, then at intervals spray the remaining plants with a dilute Bordeaux solution, made as follows: Dissolve 4 tablespoonsful of Copper Sulphate in 1 quart of hot water; also dissolve 4 tablespoonsful of fresh lime in 1 quart of hot water. Pour these solutions together into a pail containing 1½ gallons of water. This mixture, prepared in this way, loses its value in a few days, so new solutions should be made whenever the plants require to be sprayed.

O. A. C., Guelph. W. LOCHHEAD.

Rose Buds Not Maturing.

1268. SIR,—I have a Clothilde Soupert Rose which has had only one flower; buds form on it but do not mature. Is this for want of nourishment or too much or too little water? It is regularly watered, is healthy and free from insects. Do such plants need rest in winter?

Yours truly,
Simcoe. WILLIE MURRAY.

As the rose plant in question appears to be in a healthy condition as far as its growth is concerned, the dry arid atmosphere of the house is probably the cause of the buds not maturing. Roses like a moist humid atmosphere to grow and flower in. Sprinkle or syringe the plant with clear tepid water two or three times a week, this will help it.

If the rose has flowered all the past summer and autumn, a rest will benefit it. This can be obtained by placing the plant in a cool temperature of about 40 degrees, and giving it only sufficient water to keep the soil barely moist. A month or two of this treatment will not injure the plant.

Roses, however, are not good house plants.

Hamilton. W. HUNT.

Whale Oil Soap.

1269. SIR,—Could you let me know where to write for whale oil soap for spraying, and at what price it can be obtained, and oblige.

Yours respectfully,
Olinda. M. G. BRUNER.

Mr. J. J. Ward, of Consecon, Ont., manufactures whale oil soap, and would be glad to quote prices. Mr. G. B. Fisher, of Bur-

lington, is Provincial Inspector of San Jose Scale, and will be glad to correspond with you as to the best means of applying the soap, and the proper time for the work.

Boxes for Apples.

1270. SIR,—I understand that an increasing number of fruit growers in Ontario and Nova Scotia are shipping their apples in boxes, As you are doubtless aware they have always been sold in boxes on the Pacific Coast. We think we have two good reasons for preferring the box to the barrel. The first is: families in towns and cities can often afford to buy a box who could not afford to buy a barrel. and this increases consumption. The second is that a larger quantity of fruit can be put in the space, thus increasing the carrying capacity, an important item. Up to the present time everybody has made a box to suit himself, so that we find boxes of apples containing from thirty-four to fifty pounds of fruit. Our Association asked the Hon. Minister of Agriculture to pass an Act legalizing a certain sized box, but so far no action has been taken. We are anxious to have a legal box, and our Association recommends the same size box that is in use in Oregon and Washington, for the reason that our fruit comes in direct competition with theirs in the Manitoba and Northwest Markets, and as those states are now shipping to Great Britain and Germany, no doubt they will come in competition with your eastern fruit, and it will avoid confusion if we can have uniformity of package.

I am writing the Association in Quebec and Nova Scotia to the same effect, and asking their co-operation in getting the Dominion Government to take action in the matter.

Hoping to have the active support of your Association. Yours truly,

N. J. BRANDRITH,
Box 452, Sec. B. C. F. G.,Ass'n
New Westminster, B. C.

Uniform packages for our fruit is one of the hobbies of our Ontario fruit growers, and we are pleased to find our friends in British Columbia aiming for the same object.

A few years ago when we began using a box for apples, we adopted a size measuring two cubic feet, viz., 24 x 12 x 12 inches outside, but recently changed this slightly to make them pack in the car to greater advantage, and adopted a box 10½ in. high, by 11½ in. wide by 22 in. long, outside measurement. This corresponds very closely with the sizes shipped from New York City, and offered at fifteen cents each by Frank B. Read, 216 Washington street, New York City, which he claims to be the *regulation size*, and which measures *inside* 9¾ in. high 10¾ in. wide by 20¾ in. long. These are made with ¾ inch ends and ⅜ inch sides.

But before ordering these wooden cases we would recommend our friend to write to the Dyment Baker Co., London, for samples of their new case, which promises to take the first place for fancy, tender fruits in all markets.

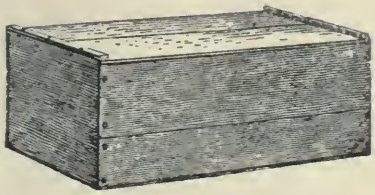

FIG. 2233. THE AMERICAN APPLE BOX.

The outside measurement of this package is 10¾ in. high by 12½ in. wide by 21½ in. long, and consists of a crate, containing four trays of fillers of sizes to fit the grade of fruit which is being packed.

New Uniform Fruit Packages.

1271. SIR,—Will you please write me a few words and tell me will every one have to put away the berry boxes we have at present, because they don't hold the full Imperial quart?

I have the latest kind that everyone has up till now. Yours very truly,

Olinda. ROBERT G. ANDERSON.

The Act providing for the use of uniform baskets for fruit will in no way interfere with the use by shippers of the baskets they have on hand, but it provided that any baskets in use not in conformity with the specified size, be branded with the number of quarts which they do contain.

There is no change in the berry box ; in Canada we have always used the well known strawberry box, containing a Winchester quart, or 4/5 of an Imperial quart, and this is now legalized by the Act.

My Garden.

1272. My garden has done better this year. Cucumbers, tomatoes. grapes and potatoes have done particularly well, especially the last, although not generally good in the neighborhood. I may also say that I had a few peaches this year,

for the first, on Early Crawford, and they were large in size and highly flavored. I have had the tree some years. I also saw a peach tree in St. Mary's with a good crop, but not very large. I mention this, as the opinion is growing that peaches can be grown further north than usually grown. I think a few may be grown here most seasons for home use, but not enough for sale.

What is the cheapest way to supply potash to the land. I have got along so far with wood ashes, but as coal is being more and more used they are getting scarcer? I see potash is advertised in the journal, but it is in New York, and no agent is mentioned for Canada.

Listowel. A. J. COLLINS

Wood ashes can be had in car lots from Rathbun Co., Deseronto, at a very small cost. Would fertillzer dealers respond concerning potash.

Open Letters.

San Jose Scale Remedies.

SIR,—The fruit growers of Ontario are becoming more and more interested in the San Jose Scale, and the question of how to extinguish it has become one of great importance to many who at first looked upon the agitation with indifference. In the original centers of infestation the San Jose Scale has multiplied and spread during the past season more than ever before. There is no longer lack of evidence of its destructiveness, for many fruit trees have been killed by it at these old infested points. The results from the remedies used last spring when applied carefully and according to the instructions, are very satisfactory and encouraging, and the Minister of Agriculture for Ontario will again supply spraying material (whale oil soap and crude petroleum), for the destruction of the San Jose Scale, at one-half its cost laid down.

Parties wishing to take advantage of this opportunity may do so by communicating with me on or before January 30th, 1902, after which date we will not guarantee to fill orders.

GEORGE E. FISHER, Inspector,
Dec. 16th, 1901. Freeman, Ontario.

Great Britain's Imports of Food Products.

SIR,—In looking over the proceedings of the 10th annual meeting of the American Warehousemen's Association held in St. Louis, Mo. October 17, 18 and 19th, 1900, I find that during the year ending June 30th 1900, England consumed $800,000,000 in food stuffs or $1,200,000 daily. Of this amount $650,000,000 was the value of imported products, the refrigerated imports amounting to about $400,000,000 made up as follows; $135,000,000 in dressed meats; $30,000,000 in cheese; $80,000,000 in butter; $30,000,000 in eggs; $30,000,000 in poultry; $25,000,000 in frozen fish; $35,000,000 in fruit and $40,000,000 in other perishable food stuffs. In addition to this the consumption of foodstuffs in England is said to increase about $25,000,000 yearly.

The above figures show what this market is worth and surely such a market is worth contending for. We cannot utilize it to advantage without a strictly reliable cold storage service and we should not desist till this is secured.

Freeman, Dec. 10th, 1901. G. E. FISHER.

Nova Scotia Awards.

SIR,—I have just received from W. J. Buchanan, director-general of the Pan-American Exposition, the official list of awards to growers of Nova Scotia fruit exhibited by me there, which please publish:

The Nova Scotia Fruit Growers' Association for general exhibit of fruits—one gold medal.

F. Arthur Starr, Cornwallis, for display of 85 varieties of apples and 20 varieties pears—one gold medal.

Herbert Johnson, Wolfville, 20 varieties and 2 barrels apples—one silver medal.

Mrs. Olivia Johnson, Wolfville—one bronze medal.

I. Elliott Smith, Greenwich—one bronze medal.

C. M. Vaughn, Wolfville—one bronze medal.

Saxby Blair, Government Farm, Nappan, fruits in acids—one bronze medal.

Mrs. Ethel McKeen, Gay's River, Halifax—diploma.

James Elderskin, Wolfville—diploma.

Byron Chesley, Clarence, Annapolis—diploma.

Byron Chesley for fruits in acids—diploma.

W. C. Archibald, Wolfville—diploma.

The awards for vegetables have not yet been received. Arriving as we did in the last month of the Exposition, and laboring under great disadvantage in exhibiting, the awards are most satisfactory and should be a cause of pride to every Nova Scotian.

Wolfville, Dec. 9, 1901. J. W. BIGELOW.

Western New York Fruit Growers.

SIR,—Our 47th annual meeting in this city Jan. 22nd and 23rd, 1902.

Program will include paper and talk from some of the leading scientific and practical horticulturists in America.

The discussion of questions will be a more prominent feature than ever before and the program will be exceptionally fine.

It is worth any man's while, if at all interested in fruit, to attend this meeting and rub up against over 800 of the cream of fruit-growers in New York State.

I will mail program, soon as ready, to all enquirers.

Yours, etc.,
Rochester, N. Y. JOHN HALL.

Rose Exhibit at the Pan.

SIR,—Owing to an oversight in connection with the awards made in the Floriculture Department of the Pan-American Exposition, the continuous and beautiful display of roses and cut flowers made by the firm of Morris, Stone & Wellington did not receive recognition by the Judges in their report. This error was not intentional, and it is to be regretted that it cannot be officially corrected. In justice to this firm, and also to Mr. Cameron, at Queen Victoria Park, Niagara Falls, I desire to say that the floral contributions of these gentlemen, continuing almost throughout the entire season, formed one of the most pleasing and prominent features of the Canadian display in the horticulture department. In fact in this respect we stood quite in the front rank of any of the other exhibits, and the credit for this is largely due to our friends as above mentioned.

Yours very truly,

St. Catharines. WM. H. BUNTING.

A FLORAL LOVE STORY.

Fair Marigold, a maiden fair; Sweet William was her lover,
Their path was twined with bittersweet; it did not run through clover;
The lady's tresses raven were, her cheeks a lovely rose;
She wore fine ladyslippers to warm her small pink toes.
Her poppy was an elder, who had a mint of gold—
An awful old snapdragon to make one's blood run cold!
His temper was like sour grass; his daughter's heart he wrung
With words both fierce and bitter—he had an adder's tongue!
The lover's hair was like the flax, of pure Germanic type,
He wore a Dutchman's breeches; he smoked a Dutchman's pipe.
He sent marshmallows by the pound and choicest wintergreen;
She painted him forget-me-nots, the bluest ever seen!
He couldn't serenade her with the nightshade lark,
For every thyme he tried it her father's dogwood bark.
And so he set a certain day to meet at four o'clock;
Her face was pale as snowdrops, e'en whiter than her frock.
The lover vowed he'd pine and die if she should say him no,
And then he kissed her beneath the mistletoe.
"My love will live forever, my sweet; will you be true?
Give me a little heartease, say only, 'I love yew.'"
She faltered that for him alone she'd orange blossoms wear,
Then swayed like supple willow and tore her maidenhair;
For, madder than a hornet, before them stood her pop,
Who swore he'd cane the fellow until he made him hop!
Oh! quickly rose Mary. She cried: "You'll rue the day,
Most cruel father. Haste, my dear and lettuce flee away!"
But that inhuman parent so plied the birch rod there.
He settled all flirtation between that hapless pear.
The youth a monastery sought and donned a black monkshood;
The maid ate poison ivy and died within a wood.

—*N. Y. Tribune.*

Important Notices.

Address money letters, subscriptions and business letters of all kinds to Secretary of The Ontario Fruit Growers' Association, Parliament Buildings, Toronto.

Copy intended for publication in Canadian Horticulturist should be addressed as usual to Linus Woolverton, Grimsby, Ont.

All postoffice orders, cheques, postal notes, etc., should be henceforth made payable to Mr. G. C. Creelman, Toronto.

PRIZE COLLECTION OF VEGETABLES FROM PINE GROVE GARDENS, ORILLIA,

At East Simcoe Horticultural Society's Exhibition, 1900.

Fig. 2234.

FOR 11 years in succession the collection of vegetables from Pine Grove Garden has been awarded 1st prize and diploma at the East Simcoe Horticultural Society's Fall Exhibition. In 1900, in addition to the collection of vegetables, 33 other prizes were awarded to vegetables from these gardens, three of them being for collections, viz., capsicums, tomatoes and cabbages, and 30 for other entries.

The gardens consist of 25 acres, situated in the west ward of Orillia; one-third of the land is of very light sand, one-third of clay loam and one-third of deep black muck. When 15 years ago it came into possession of the present owner, Mr. McKinnell, it appeared a most unlikely spot for a garden. During the first year or two, the seed was blown out of the ground in one place, men and horses mired in another, and hundreds of tons of boulders had to be buried or otherwise got rid of from another. By filling up the sand and gravel pits, thoroughly draining the swamp (once a menace to the health of the neighbors) by extensive cultivation and fertilizing, aided by a good system of irrigation, it has been converted into one of the most productive 25 acres in Canada, shipping many car loads of the finest vegetables annually to the lumbermen and miners of the northern districts of Ontario. Special attention is given to the following crops, viz.: Tomatoes, onions, celery and strawberries; of the last named 10,000 quarts were sold during the last season.

Fig. 2235.

GLADIOLI

WRITE FOR CATALOGUE.

Groff's "World's Best" Hybrid Seedlings.
Groff's Pan-American Exposition Collection.
Winners of the gold medal and 13 first prizes at the Pan-American Exposition, in competition with the leading American growers. Lemoine, Narcissus, Childsi, Gandavensis, and all the leading strains in great variety.

JOHN A. CAMPBELL, Simcoe, Ont.

FIG. 2236. CAMPBELL'S EARLY GRAPE.

THE
CANADIAN HORTICULTURIST
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✳ ✳ FEBRUARY ✳ ✳

CAMPBELL'S EARLY GRAPE.

LAST summer we fruited this grape for the first time, and our acquaintance with it was most favorable. Its fine size, its earliness and good quality seem to combine to make it the most promising of our commercial varieties. We do not wish to commend the grape too highly, for one season's acquaintance is not sufficient to enable one to speak with authority ; but it certainly is an earlier and a better grape than the Concord, which is now the leading commercial variety in North America. We have still to study the vigor of the vine and its productiveness, and if, in these respects, it equals the Concord, then we can recommend the grape without reserve.

The name perpetuates the memory of the venerable G. H. Campbell, of Ohio, who counted this one of his first productions. He had been experimenting fifteen years, endeavoring to produce a grape that should have the merits and not the faults of the Concord, and this was the result of different crosses with Hartford, Concord, Moore's Early, and Muscat Hamburg, selecting the hardiest and healthiest vines.

The grape ripens with Moore's Early, its bunch is large and shouldered ; the berries large, often one inch in diameter, black in color, with thick blue bloom ; flavor rich and sweet without foxiness ; and it should be valuable for distant shipments.

Campbell's Early was first sent out in 1896, so that it has not yet become very widely known, but we believe that we have spoken of its merits in moderate terms. We are placing it on the list for distribution in the spring of 1902, and we hope that we shall soon have reports of its behavior in various parts of Ontario, especially regarding its ability to resist cold in our northern sections.

NOTES AND COMMENTS.

Aphis and Rose Thrip.—At our Cobourg meeting a paper was read by Mr. Jackson, of Port Hope, on the Rose, and in the discussion he advised spraying the foliage with a strong solution of whale oil soap and extract of tobacco, using 20 parts of the former to one of the latter. This, he said, would rid the bushes of the pests. The extract of tobacco can be purchased in pint bottles at drug stores.

Deep Rooted Trees are advocated by Richards, of Texas, as a means of withstanding the effects of drouth. He claims that trees should be so pruned and trained that they send down their roots deep into the subsoil, and argues that the deeper rooted they are, the healthier, the longer lived and the more productive they will average. We shall be glad of the views of our readers who have been observant of these conditions. In our own opinion such treatment would not be altogether advantageous, for the nearer the surface the roots lie, the more easily can they be fed with surface manuring.

A Fruit Grader to separate our various fruits into uniform sizes has become a necessity of the age. It is impossible to grade by the eye to such exactness as is necessary. This was plainly shown by the reports of inspectors at Montreal, who, having examined fruit so graded, warned the packers that they had found in their packages three specimens out of ten that were below the grade size. This variation may not have been more than 1/8 of an inch, and not noticeable to the best educated eye, and yet was sufficient to subject the shipper to a fine and to the publication of his name as that of a person guilty of fraud.

The expense of buying a grader is therefore one of the necessities of the man who desires to ship graded fruit. Fortunately such a machine, invented here in Ontario by Mr. A. H. Pettit, of Grimsby, was shown at our Cobourg meeting last December, and we hope it will soon be placed upon the market.

Nitrification.—Wis. Bul. 85 gives results of some investigations of the variations in the amount of Nitric nitrogen and soluble salts in the soil under different conditions of cropping and culture, concerning the amount required for healthy growth, etc.

It was found that soil srirred once in two weeks was left, after ninety-one days, with 53 lbs. of Nitric nitrogen per million of dry soil, and that stirred once a week left the same quantity of soil with 98 lbs. of Nitric nitrogen. It was found that the largest amount was developed during an interval of 258 days by stirring to a depth of three inches; a less or greater depth not giving as good results.

Large vs. Small Fruit Farms.—The question of the over production of fruit is considered anew year after year, and the occasional gluts in our markets and the low prices returned us often give great reason for anxiety lest we soon reach the day when prices do not give any surplus over the cost of production. And this day will not be very far distant if we continue to grow scrubs, for in these days a glut of trash is easy to bring about; bnt a glut of large sized, highly graded fruit, with fine color and first quality, has never yet occurred. Those immense apple orchards of the Western States are unwieldy and the results unsatisfactory. Mr. G. T.

Powell, of New York State, states that the great Judge Wellhouse orchards, of Missouri, have yielded an average of but fifty bushels of apples per acre for twenty-two years and this is one of the best cultivated of the mammoth orchards of the West. Some of these big orchards have never been pruned or cultivated since they were set. Such orchards will never cause a glut of fine apples in any market, and the fact of their being planted need never make us anxious over the future of our apple markets.

The secret of making money out of apples in the future is to produce something superior to the product of such orchards. A small orchard, no larger in size than can be cultivated, pruned, fertilized and the product handled and packed in the best manner, is the ideal investment. The markets of the world are opening up for choice stock in a wonderful way, and the secret of success lies in supplying this growing demand.

Cleaning the bark of trees, before spraying for scab or insects, is most important, and a job neglected by most fruit growers. To have healthy, vigorous trees, the bark must be kept in a healthy condition, and how can it be so if covered with dead bark, and with lice which suck away the strength of the trees? Where San Jose scale prevails this work is doubly important; and not only must the trunk be scraped in such a case, but the tree subjected to a thorough cutting out of all superfluous wood, that the spray be not wasted on useless parts. To be successful one must have an effective pump, and the operator must be suitably dressed.

Trolley Lines for Fruit Growers.—Now that the electric roads are being built throughout so many of the best sections of our province, it is of interest to know that a combined road wagon and railway truck has been invented, which promises to be a great saving of expense to the farmer and the fruit grower. The frequent loading and unloading of baskets, necessitated in the transfer from packing house to express car, and from express car to consignee, not only takes much time but also causes injury to the fruit. A truck that could be loaded at the packing house, carried bodily on board the trolley and run off directly to the consignee, without handling the goods, is therefore a most valuable invention.

A package for fancy fruit has been invented by Mr. Wm. Wilson, of London, Ontario, which, we believe, will be very popular. It was this package, then not quite perfected, which Mr. M. Pettit used last November in shipping his Kieffer pears to Glasgow. Our only criticism of the package was that a different size of case was needed to accompany the different sized fruits, thus making storage more expensive. Mr. Baker, of the firm manufacturing the case, writes under date of Dec. 5th, as follows:

"We can now furnish a package that will fit any sized fruit and pack into a compact square. Twenty-four packages fill the space of one cubic ton exactly, making it easy for a shipper to check his ocean freight. So far as I know, or can see, we have now a perfect grader and a perfect package"

We are much pleased with the prospect of having one exterior size of case for all fruits, and certainly it will simplify the transportation problem if a case 22 x 10½ x 12½ in. will contain all sizes of such fruits as apples, pears, peaches, plums, berries and grapes.

Decease of Mr. W. A. Whitney.—We desire to place on record in this journal the deep regret with which we have received the news of the sudden death of our director for Stormont and Cornwall. We also wish to convey to the bereaved family the sincere sympathy of the directors and members of the Ontario Fruit Growers' Association, of which he has always been an interested member. Mr. Whitney died on the evening

of Jan. 17th, from heart failnre, the result of over-exertion. He was born in Grenvile County in 1834, was twenty-five years head master of the Iroquois High School, and for several years classical master of the Morrisburg Collegiate Institute. He had been publishing the St. Lawrence News for about four years.

Rev. Robt. Hamilton, of Grenville, Que., of the Horticultural staff of the Paris and Glasgow exhibitions, called at our office a few days ago. He states that the Glasgow Exhibition was a financial success; the expenditure was limited to exhibits and very little spent on exterior show. No doubt the immense sums spent on ornamentation of the exterior of the buildings and of the grounds at the Pan-American was the secret of its financial failure.

The Great World's Exposition at St. Louis in 1903.—On the 20th of December last, the first spadeful of earth was lifted by President Francis, and deposited in a wagon drawn by four white horses; and this was made the occasion of several most enthusiastic addresses. It is expected that the United States Government will spend at least one and a half millions upon its exhibit, which will be much in excess of that spent upon its exhibit at the Chicago Exposition.

Pomology.—Prof. F. A. Waugh, of Vermont, criticises Prof. Bailey's statement that Fruit Growing and Pomology are synonymous terms, because the latter is a science, the former an art. Pomology is the study of fruits and their characteristics, and of the trees and their habits, and a systematic pursuit of it, in his opinion, receives altogether too little attention these days. "In particular." he says, "I think attention needs to be called to the lack of recent work in descriptive pomology. The other day I received a report from a leading horticultural society, sustained by a great state on the other side of the Mississipi river. In this report there were given a large number of descriptions of varieties of fruits. The great majority of those descriptions were taken bodily from Downing's "Fruits and Fruit Trees." Think of it! Those descriptions were written fifty years ago or more, from specimens picked in the Eastern or New England States, and yet they are the only ones which an enterprising secretary of a strong horticultural society can find when he goes pirating about for the wherewithal to make up his reports. In this same report there was hardly an original description given."

The "Fruits of Ontario," a work undertaken under the direction of the Board of Control of our Fruit Stations may be slow of progress, but fortunately will escape this severe censure. One merit, at least, it will possess, that it describes fruit and fruit trees as they grow in Ontario and not as Downing found them in some distant section of North America, fifty years ago.

New Buildings at the Industrial are now assured, since a by-law has been passed by the citizens of Toronto granting $133,000 for new buildings. This will make the Industrial Fair of still greater importance to the province, and we should see to it that better provision be included for our fruit exhibits. We have two representatives on the Board, viz., Mr. A. H. Pettit and Mr. W. E. Wellington, and no doubt that they will see that our interests are not neglected.

The British Apple Market in 1901 has given satisfactory returns to shippers, though not equalling the extravagant expectations of those who judged the world's crop by the shortness of that in their own immediate locality.

The imports to Liverpool to Dec. 31st, 1901 amounted to 252,000 barrels, just about

half the quantity of American apples sent over in 1900. The Baldwins have been chiefly from Canada and Maine, very few New York State Baldwins having been sent forward. The finest brought 22 shillings a barrel, the Canadians being always slightly ahead in price.

Canadian Snow apples are much valued when they arrive clean, but owing to black scab, they are looked upon with much suspicion. Could we only succeed in growing them clean, and get them carried cool enough to retain their crisp flesh, there would be good money in them.

The Newtown Pippin, known also as the Albermarle, has still the preference in Great Britain where it can be landed free of scab, indeed some buyers seem to think the scab only a proof that it is genuine. California Newtowns are being forwarded in greatly increased quantities; more than 50,000 bushel cases arriving in Liverpool in the month of December 1901, but in quality they are far behind those grown in the East, the climate not being suitable for producing a juicy crisp apple of high quality, and good color. In consequence, it is not surprising that prices declined for California Newtowns from $3.00 to $1.75 per bushel box.

The Sour Cherry is arranged in four groups by Powell, Delaware Station, viz.: (1) Montmorency, (2) Morello, (3) Bruseler Braune, (4) Vladimer. He recommends for trial, of the Montmorency group; June Amarelle, King, Lancaster, Sklanka and Weir No. 2: of the Morello group: Double Natte, Ostheim, Wragg, Minnesota and Koslov Morello: of the Bruseler Braune group; Besserabian and Bruseler Braune.

The Keiffer.—A writer in the Rural New York champions this much abused variety, claiming that if picked in September and properly ripened it is a very good pear to eat, and free from grit or woodiness; but when left on the tree until the last of October it changes entirely and becomes gritty at the core.

Powell, of Delaware Station, has been experimenting as to the self pollenisation of this variety, and concludes that it is almost self sterile. He finds that, where cross-fertilized, the fruit develops much more rapidly and at the end of two weeks is twice the size of self-fertilized fruit. He advises planting every third row in an orchard of some other variety than Keiffer and suggests such varietles as Howell, Manning, Duchess and Bartlett.

An Agricultural University.—From comparitively small beginnings the Ontario Agricultural College at Guelph has developed year after year until it has reached the front rank among institutions of its kind on the American continent.

The munificence of the late W. H. Massey in furnishing the means for the erection of a library and Convocation Hall, and more especially that of Sir W. McDonald, in his gift of $100,000, or more, for the erection of buildings in which special training will be given in Nature study and Domestic Science, mark a new era in its development, during which it may command a position far in advance of that which it now occupies.

Dr. Mills is now visiting other institutions for the purpose of gleaning from their experience every thing that will help toward making this undertaking a magnificent success, and in carrying out these plans for the ultimate good of the farmers and the fruit growers of Ontario.

This is but a part of a larger plan for the stimulation of education in Domestic Science and Agriculture, which has been outlined in brief as follows:

Part 1 of the plan is intended to give object lessons of improvements in education from the consolidation of five, six or more small rural schools into one central graded

school, with a school garden and a manual training room as part of the equipment. It is proposed to offer financial assistance to one locality in Ontario, and one locality in each of the Provinces of Quebec, New Brunswick, Nova Scotia, and Prince Edward Island, to promote this.

Part 2 of the plan is for the purpose of giving object lessons of the value of school gardens and nature studies as a part of general education at individual rural schools, to be begun by means of a travelling instructor until a considerable number of suitable trained and qualified teachers are available. It is proposed to offer financial assistance to one group of ten or fewer schools in one locality in the various Provinces, to this end.

Progress in agricultural education would be made by starting evening continuation classes in the rural districts in connection with those groups of schools, or in connection with the consolidated schools.

Part 3 of the plan provides short courses of instruction and training for teachers for rural schools who desire to qualify themselves in those newer subjects and methods of education, at the Ontario Agriculture College at Guelph, in a special building.

If provision should be made for a class of about 30 teachers at each short course, it is hoped that the Government would arrange to enable approved teachers in rural schools to take the short course, without loss of situation or loss of salary. For the first year it is proposed to make an allowance for the teachers' travelling expenses to the college, and an allowance of $25 to help in meeting the expenses of board and lodging, to every approved teacher who has taken a full course satisfactory.

It is proposed to offer to the province at the Agricultural College at Guelph, a residence building to accommodate not less than 100 female students.

It was suggested that suitable courses would include instruction in dairying, poultry-keeping, bee-keeping, fruit-growing and general gardening; preparation and serving of foods, sewing, dressmaking, and the simpler forms of households art and decoration, care, and cleansing of rooms, etc.

Lord Roberts' Flower.—The Fruit Trade News, of London, England, proposes the wearing of the Ixia by patriotic citizens on Pretoria Day in honor of Lord Roberts' victorious entry into that stronghold. Its green color, it being a native of the veldt, its blooming at the period above mentioned,

FIG. 2237. LORD ROBERTS AND HIS FLOWER.

seem to combine in rendering the suggestion an appropriate one. Ixia viridiflora was found by Schomberg in California, who stated that it bore a cluster of green flowers something like a green head of wheat. This Ixia is very pretty for table decorations and may be easily grown from corms planted in pots, or out doors in early spring.

FRUIT GROWERS AT ROCHESTER—I.

BEING invited to speak on the export of tender fruits, the writer attended the annual meeting of the Western New York Horticultural Society, which was first organized forty-seven years ago, five years before our own. The division which arose last year between fruit growers and nurserymen over the proposition to seek legislation for compelling fumigation of nursery stock has been agreed to by both interests, and, in spite of the snow blockade, a large number of the best fruit growers were present. Among those representing Ontario were Messrs. E. D. Smith, Winona; Joseph Tweedle, Winona; and E. Morris, of Fonthill.

Dwarf Apple Trees.—Prof. Beach, of Geneva Experimental Station, advocated training apple trees in a different manner in view of the necessity of fumigation and spraying, and Dwarfs were advocated as one way of meeting the conditions. These are made using the Doucin, or the still slower growing French Paradise stock. Every variety of apple succeeds on Doucin stock, and bears early, say in five years after planting; while on Paradise it may bear still earlier. Planted 8 x 8 or 10 x 10 one may set 400 or 500 trees per acre, and thus to a certain extent, they will make up in number what they lack in size. These little trees will not of course live to the age of standards, and their usefulness will be over in 20 or 30 years, but it is suggested that possibly these disadvantages will be counterbalanced by ease in reaching them from the ground for pruning, spraying, thinning and fruit gathering, while, if the apples are blown down, they will not be so liable to injury by winds. The planting of such trees is on the increase in England where the Dwarf is growing in favor.

The Bismarck apple was spoken of as a very early bearer of very fine fruit, for even on standard it has been found bearing fruit at the age of two years; surely it will be worth while to try this Bismarck apple at all fruit stations.

New Ideas in Strawberry Culture was the subject of a vigorous address by R. M. Kellog, of Three Rivers, Michigan. The first runner plants, he said, were the most vigorous and productive, and he had made it a rule to use only these. In this way he had succeeded it raising plants of the highest value for productiveness.

Mr. Kellog has promised to give us a copy of his address for a future number of journal so we will omit farther note of it here. "What is the berry you sell the most plants of?" I asked him as we were seated at dinner. "Well," he said, "during the past season the Brandywine; it is an excellent shipper and very productive."

"I think," said Mr. E. D. Smith, of Winona, "that the Williams is the most popular market variety. It is also an excellent shipping variety, and in Ontario it is in far greater demand than Brandywine."

"What about the Clyde," I asked; and here the doctors seemed to disagree. Smith said it was too soft to buy for reshipping; Kellog said it was a very profitable berry grown on heavy soil, but not profitable on light sand. "There is one variety named after yourself," said Kellog, "the Woolverton, that is a wonderfully fine berry. It deserves to be much more widely grown than it is, for it is firm, of large size, and productive, in many respects it is an ideal berry."

Of the new varieties Mr. Kellog mentioned Aroma as being very promising.

The Cherry Fruit Worm was characterized

by Mr. G. H. Powell, of Briarcliff Manor, N. Y., as the worst enemy of the sour cherry. So serious had the pest proved itself in some sections in New York state, that the cultivation of the Montmorency and Morello cherries was in danger of ruin. The worst feature was that no certain remedy had yet been discovered by our scientists.

The Cherry Rot was also a most serious obstacle in the way of the cherry grower. Powell had checked it by the use of pure sulphate of copper, 2 ounces in 40 gallons of water without lime, so as to leave the fruit clean for market. "Did not this injure the foliage asked a fruit grower. "No," said Mr. Powell, "I used as much as three, and even four, ounces to forty gallons of water, applying it every day, and even this did not spot the foilage." "How many times did you apply it," asked another. "I applied it" said he, "about ten times in all."

Prof. Beach, of Geneva Experiment Station, said he had used Bordeaux on his cherries for Brown rot, directly after the fall of the bloom, but could not see sufficient benefit to really pay for his work. He warned fruit growers to be careful in the use of copper sulphate "for it will certainly spot the foliage, if made too strong."

Prof. Stewart, of Geneva, said Brown rot fungus was a more serious enemy than was commonly supposed. Its attacks were not by any means confined to the fruit, but it also affected the twigs, and in wet seasons often causes their death. The cherry, the plum and the apricot were all subject to it, in the case of the two latter it often killed them back a foot, and in peach trees even two feet. This fungus, Stewart declared, started its growth much earlier in the season than most people supposed, and continued its ravages all the season through, both on the fruit and the twigs, and therefore it was wise to begin treatment early.

THE QUEBEC FRUIT GROWERS.

THE Ninth Annual Meeting of the Pomological and Fruit Growing Society of the Province of Quebec was held on the 18th and 19th of December, at Coaticook, situated among the hills, or high rolling land, of the Eastern Township, just east of Sherbrooke.

The meetings were well attended by a flourishing class of farmers, who, although their chief industry is dairying, took a lively interest in the subject brought up and were eager with questions and entered with enthusiasm into the discussions.

It was certainly a surprise to some of us to see the fine collection of exceptionally high colored fruit that was shown on the tables. There were about 65 plates;—8 or 10 plates were Fameuse or Fameuse type of beautiful color; Ben Davis was in evidence, but specimens even poor in quality, size and color, and it is to be hoped the coming fruit grower in that section will give it the go-bye in favor of fruit of higher quality which they are evidently capable of producing.

The Russians were not as much in evidence as one would suppose in that section, only three or four plates being shown.

I was very much surprised to see a plate of Baldwins said to be grown in the vicinity. To see such a fine collection, 125 miles east of Montreal, leads us to wonder where is the limit of the fruit producing area of the Dominion. In all probability, if this fruit belt was to be followed through New Bruns-

wick and on to Nova Scotia, we would find one unbroken chain from Lake Huron on the west to the shores of the Atlantic on the east.

Mr. J. M. Fisk, of Abbotsford, gave an able address on varieties of apples to grow for export and the discussion that followed gave Fameuse, McIntosh, Winter St. Lawrence and Rochelle first place. Russian are not in demand ; Windsor Chief and Lawver promised well, Blue Pearmain is good, but such a shy bearer that it is not considered profitable.

The question of packages also came up and the box is generally considered the most satisfactory when packing in barrels it was recommended to use paper at the head and to use excelsior for pressing, to avoid brusing the fruit.

W. Craig Jr., Abbotsford, showed some specimens of cranberries grown on his farm and gave a very interesting address on the very desirable fruit. He says any waste land of mucky nature that can be flooded during the winter with a foot or two of water and kept flooded during early spring is all that is required: with such land it is only necessary to cover with an inch or two of sand to keep weeds in check and set the plants a foot or so apart, flooding in the fall and draining off in May; the plot will take care of itself and be a paying investment in three or four years from the time the plants were set.

G. Reymond, La Trappe, gave an address in French on starting an orchard which led to a lively discussion in both languages.

Mr. Reymond is a Horticulturist and nurseryman at Oka farm, a short description of which might be interesting, showing the possibilities of the Province and of a farm well managed.

Lying to the north of the Lake of Two Mountains on the Ottawa river is the Trappist Monastery Agricultural College and farm. This farm comprises about 1000 acres. The fine thoroughbred stock of cattle, horses, sheep and swine of many breeds delight the eye of the stock raiser.

On the farm they have about 200 cows, 250 pigs, a large number of horses, a cheese factory where the famous Oka cheese is manufactured, which sells at 25 cents per pound wholesale ; about 200 acres of orchard, vineyard and nursery; large wine presses that have made Les Trappistes famous in domestic wines.

The nurseries and orchards are also a large source of revenue. The Flemish Beauty pear grows with them to the highest perfection.

The rules of the order of La Trappe Monks are very strict and only male visitors are admitted into the monastery. The Monks are compelled to rise at 2 a. m. for prayer and meditation. One meal a day only, as a rule, is permitted and there is entire abstinence from meat, fish, eggs or butter ; a spare quantity of bread, vegetables and milk only being allowed. It is most interesting to watch the Monks in the field performing their silent labor; everything is done by rule and whatever the occupation, it must be suspended when the bell sounds for the religious exercises.

Besides the forty monks or so that labor in the fields from five to six hours each day, there are employed about thirty regular farm hands who carry on the work that makes this farm a pattern for all and a source of profit to the owners.

A plant distribution of two plums (imported), one peony, and one rose will be given to each member in the spring of 1902, together with the annual report.

Mr. T. L. Kenney, South Hero, Vt., Prof. Waugh and Prof. McCoun addressed the meeting and helped along the various discussions in an able manner.

The Association is to hold its next summer meeting at Aylmer, Quebec.

Maitland. HAROLD JONES.

PRUNING.

CRITICISMS BY THE EDITOR.

PROF. Bailey gives eight reasons for pruning, all of which in our opinion may be included in one object, viz.: **To so direct the growth of the tree that the best results in fruit bearing shall be attained.**

This work may be done at any time, but the vigor of the tree is best maintained by pruning while the wood is dormant. To keep the tree in condition for giving the best results attention is needed, not only during the season of rest, but also during that of growth, in order that strength may not be wasted in producing a large amount of wood which must afterwards be sacrificed.

Tree Butchery.—It is a mistake, very commonly made, to neglect an apple orchard during the first ten or fifteen years of its growth, and all at once to set to work with axe and saw to attempt to prune the trees into shape. Butchering is the only word applicable to such a process. Those trees can never fully recover from the shock received, and the huge wounds wil in time be the means of inproducing decay into the very heart of the tree, diminishing its vitality and shortening its life. We have at Maplehurst an old orchard which in its early years was treated in this barbarous fashion, and which has ever since served as an object lesson to the writer. The pruning was always done by cutting away the great branches of the trunk until those remaining were far up and almost out of reach. In one case I remember trying in vain with a ladder thirty feet long to gather the finest apples on a Golden Sweet tree, and after reaching and climbing, I had to shake down most of the golden beauties only to be smashed and bruised so that they were rendered wholly unfit for sale. Many of these old trees are hollow trunked, affording fine hiding places for squirrels, but in the end they toppled over with their own weight. Another evil was the great number of sprouts which sprang up about these great cuts, an effort of Dame Nature to make up for the sudden loss of limbs. Especially was this trouble apparent in cases where my grandfather, in his efforts to open out the head of the tree to the rays of the sun, had cut out the whole top. The

FIG. 2238.

tree with its natural inclination to upward growth, sent up numbers of strong vigorous shoots, presenting a puzzling problem for the pruner to solve.

Fig. 2238 shows a tree improperly pruned, partially illustrating our remarks under this head.

Another very common error in the pruning of apple trees is the sawing of a limb so as to leave a stump, as in Fig. 2239. Nature may try as she will, but she cannot heal such a wound; her only way is to withdraw nourishment from the useless stub until it dies and finally breaks off, only to leave a hole into the tree for the entrance of decay. The correct method is to cut close to the main stem as shown in Fig. 2240 where D points out a wound now about healed over, and C and E recent cuts properly made.

Where large cuts must be made, in consequence of long neglect, the wounds should always be painted or varnished over so as to exclude decay, until nature has done her best to heal them over. But in our opinion the fruit grower who really understands the art as well as the science of his vocation, will never need to butcher his trees. From the very first he will study the natural habit of the tree, and find out whether it is upright and somewhat pyramidal like the Northern Spy, and the Cooper's Market, or spreading like the Greening and the Roxbury Russet, and every year he will prune to favor that natural habit of his tree. By attention to each tree, at least twice a year, once in the resting season and once in the growing season, he will make the whole vigor of his tree shape itself toward one ideal form, and none

FIG. 2241.

of the strength of its growth will be wasted. Thus he will sooner have fruit, and an orchard into which he can invite his brother fruit growers with pride and pleasure. Fig. 2241 shows a tree pruned with some judgment and may serve to illustrate what has been said upon this subject.

Tree butchery, or the cutting away of large limbs, referred to above, not only enfeebles the tree by reason of the decay thus developed, but it tends to throw the strength of the tree into water sprouts instead of into the fruit spurs.

A Wrong Method.—The grower in such a case is beginning his work from the wrong place; he is beginning at the centre when he

FIG. 2239.

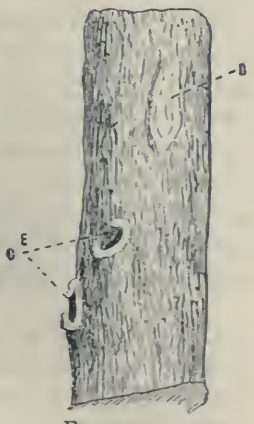

FIG. 2240.

should begin at the circumference. He should take his pruners and thin out the smaller outer branches, and so work toward the centre; thus he will thin out his tree by the removal of superfluous wood, and of superfluous fruit spurs, and he will find little need for his saw in the interior. This, of course, means a great deal of work and expense; but in this Twentieth Century we in Canada must give more time to our fruit orchards, or step to one side; we must cease to grow crops of seeds and skins, and begin to grow crisp flesh and aromatic juice, painted with carmine on the exterior by the King of Day. Let us grow such fruit, pack it in fancy packages, and we shall fear no inspectors, nor glutted markets, but find even distant buyers coming to our very doors to buy these goods, for which our fame shall soon become world wide.

HINTS FOR HORTICULTURAL SOCIETIES.

THE life of an organization consists in activity. If the meetings cease, and no work is undertaken for the general good, the society dies a natural death, but if meetings are frequent, lectures and exhibits often provided, and civic improvements undertaken, the interest of the members will deepen, the numbers increase and the whole society put on fresh vigor.

Monthly meetings during the winter season are most important. If held from house to house and made to partake of the social element they will become very popular. There are always some members willing to write a paper to open a discussion upon some garden topic, and the president can easily draw out from each one present, his experience or knowledge of the subject in hand.

Then as spring approaches plans may be matured for civic improvements. This may be worked in many ways; grounds about public buildings may be planted with trees, shrubs and flowers, public streets lined with trees and objectionable features removed, or perhaps, with municipal aid, plans for a park or cemetery designed and executed.

Two years ago a ladies' club in Carthage, Mo., undertook improvements in home and school grounds. They offered prizes for the most beautiful school room window, the decoration to be made by plants grown in the school room, from cuttings, seeds or bulbs, within a certain specified time.

The teachers and scholars became so interested that in 1900, fifteen prizes were offered to the children for gardens outside also, five for most artistic plants and training of vines on houses, five for best bed of China Asters not more than fifty square feet, and five for best vegetable garden, not more than two rods square. As soon as these prizes were announced, additional ones were offered by the citizens until they were thirty in all. Some 1500 varieties were made, and three hundred children persevered to the end, which was the first week in October, when the prizes were awarded. The result was most marked in making the city beautiful.

FIRST LESSONS IN FRUIT GROWING—III.

IN our last lesson, we studied the structure of the stem or trunk of a tree as it appears in a cross-section of any of our ordinary trees and we saw that it was made np of an outer or dead bark and an inner or live bark, of an outer or softer sapwood and an inner hard and dry heart-wood in the centre of which might be seen the remains of a soft spongy pith.

Just here it may be well for us to study the process of growth and learn how the trunk increases in size.

How Tree Trunks Increase in Diameter.

When a seed germinates, it sends down a radicle, or little root into the soil, and sends up a tiny shoot which bears leaves. As soon as root, stem, and leaves are formed, the tree has all of the parts necessary for growth. Growth takes place in two directions,–that is in length and breadth.

First let us see how the trunk, or in fact any of the parts, increases in thickness.

The root-hairs and rootlets absorb from the soil water, containing the plant-food in solution. This water, usually spoken of as the sap, passes from cell to cell through the roots and sapwood of the stem and branches to the leaves. In the leaves, it is spread out over a wide surface exposing it to the action of sunlight, where it undergoes considerable change ; much of the water is given off through the pores (Stoma) of the leaves, so that the sap is reduced in bulk and thickened, something as it is by boiling in sugar making.

Carbonic acid gas in also taken in by the leaves from the atmosphere, and certain chemical changes take place in the sap by which its sugar is converted into starchy matter, and prepared to enter into the formation of new growth.

This elaborated material then passes from the leaves down the branches and trunk and roots just beneath the inner bark, forming a sticky, half-liquid coating over all the parts of the trees, known as the cambium layer. In the process of drying and hardening, this forms a new layer of sapwood on its inner side and a thin layer of new bark on its out-

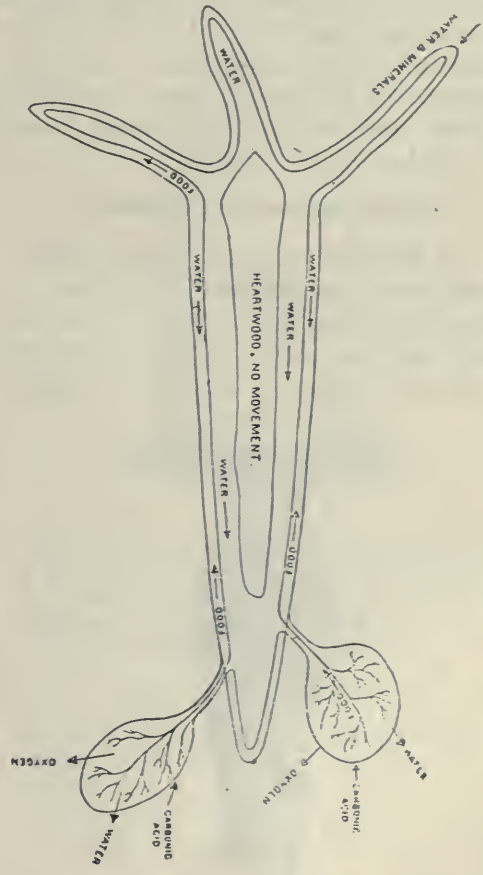

FIG. 2242. Scheme showing upward course of water or sap, and downward course of combined or elaborated plant food. (From U. S. bulletin, Forestry for Farmers.)

erside. Every living and growing part of the tree therefore, is increased in thickness each year by a layer of new wood, just inside the outer bark. In any cross section of a trunk or branch, these annual deposits may be seen in the form of distinct concentric rings. By counting these rings, we may tell the age of the tree, or any part of it, and by a comparison of the relative sizes of the rings, we may also learn much of the history of the tree, and the times through which it has passed. A thick ring naturally represents a season of good growth, while a narrow one near it indicates that growth in some way has been checked. It may have been by lack of cultivation, or draught or by the ravages of caterpillars on the foliage. Each ring is an annual chapter in the history of the tree, and the more we study the nature and habits of trees, the better are we able to read the history written in these rings.

Experiments to Prove Theories.

As a means of proving that the annual increase comes from the downward flow of the cambium, rather than from the direct upward flow of the sap, as is often supposed to be the case, we have only to tie a band tightly about any rapid growing part, so as to check the downward course of the cambium, and note the rapid increase in growth above the band just as a dam thrown across a stream increases the volume of the stream above it.

FIG. 2243. A young tree, in which the growth is checked by label wire.

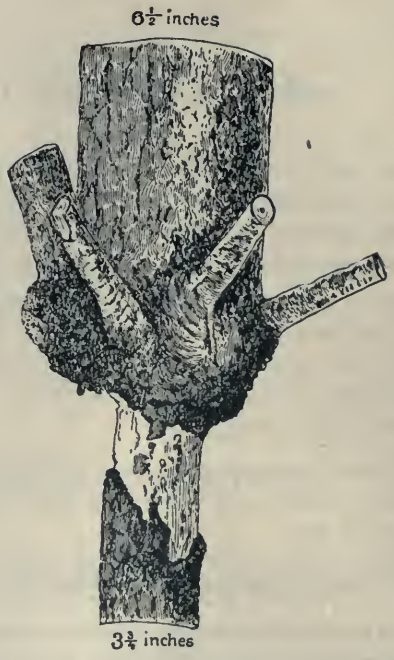

FIG. 2244. A pine girdled by mice. The lower part has only four annual rings while the upper part has eight. (From Bailey's Pruning Book.)

The accompanying illustrations show this very clearly.

That the new growth is laid on each year in rings just beneath the inner bark may be proven by lifting a corner of bark and inserting beneath it a thin sheet of tin foil, then binding the bark in place again so that it will rapidly heal over. Before long all trace of the wound will have disappeared, but when the trunk is cut through at that point, the tin foil will be found to be covered with a ring of wood corresponding to each year that has elapsed since it was placed there.

The annual laying on of new growth may also be easily seen in the gradual healing and covering over of wounds made in pruning.

How Tree Trunks Lengthen.

So much for the growth in thickness. Now let us see how growth in height and length takes place.

The same flow of sap to the leaves, and return flow of cambium which causes the increase in thickness of any of the parts of the tree, causes the rapid development of new cells of wood at the extremities of the branches ; and the lengthening of a branch or the increase in height of a tree takes place only by the addition of new growth at its extremity, any part below the extremity increases only in diameter. The trunk of a tree, therefore, does not lengthen, except by the pruning off of the lower branches of the head. If this is the case, the question might be asked : " How then do we account for the great high trunks in forest trees, where no pruning knife could ever have been used ?" Such trunks are the result of Nature's pruning. One by one, the lower branches have all been smothered out and killed by crowding trees, and as each branch has rooted and fallen away, the resulting wound has been covered over by new growth till we have at last the high smooth trunk, with no sign of the lower branches that once grew from its sides even to the ground. But the man in the saw-mill, who cuts this trunk into lumber, has plenty of evidence of their existence by the knots found in the lumber. Near the base of the trunk, these knots are all near the centre of the log, but the farther the cut from the base, the nearer the knots come to the surface, till near the top the uncovered wounds and dead stubs may easily be seen.

One of the practical lessons for the fruit-grower to learn from this is that the trunks of his fruit trees do not lengthen, and he should therefore be careful in dealing with young trees to start the heads at the desired height to begin with, and not have to prune off large limbs afterward to the detriment of the tree.

FIG. 2245. Scheme to illustrate the arrangement of annual growth. 1, 2, 3 etc ; represent the parts of the stem grown during the first, second, third etc ; twenty years of the life of the tree. K. Knots; the shaded part of each is the dead knot of lumber. (U. S. Bulletin, Forestry for Farmers.)

H. L. HUTT.

O. A. C. Guelph.

FALLING OF GOOSEBERRIES.

BY STANLEY SPILLETT, FRUIT EXPERIMENTER, NANTYR.

SIR, I will answer with your permission through the medium of the Canadian Horticulturist some of the questions I have already answered individually by mail, and this work I am pleased to do at any time for any reason.

(1). Respecting the Premature Falling of the Fruit of Certain Varieties of Gooseberries. This falling is certainly becoming a serious matter with some varieties. We tried this season to ascertain as correctly as possible what proportion of fruit fell off. Downing and Pearl gave six quarts of fruit per bushel with two quarts each of fallen fruit; Red Jacket gave seven and one-half quarts per bushel and two quarts of fallen fruit; Champion gave ten quarts of fruit with very few fallen berries. I at first attributed this falling to the berries having been stung by a moth, or rather the deposition of an egg in the berry by a moth or fly. Close observation however revealed the fact that stung berries turn red before falling and a grub is found in the fallen berry. The greater part of the fallen fruit this year was just as hard and clean and as fully developed as any of the fruit remaining on the bush and no grubs in it either, so the grub theory will not account for it. Some of my correspondents say that the fruit scales with the heat before falling.

Our bushes being on a clayey soil, made rich with stable manure, the foliage fully protects the fruit and it is only an occasional exposed branch that suffers from sun scald and yet the berries tumble.

One correspondent says, "My bushes are on sand and fully half the fruit has fallen." This correspondent attributes the falling to sun scald and the scalding to poor foliage. This gentleman's experience fortifies the opinion I had previously formed that this falling is due to the bushes setting more fruit than they can carry in a dry time. One dry season here a fine young apple orchard in grass (hay) did the same thing. This overloading will also affect the foliage, especially on sandy soil.

The gooseberry has two well defined and separate layers of roots, one layer at what was the end of the cutting, the other layer near the surface of the ground. It is this upper layer that causes deep cultivation near the bush to be so harmful. Indeed a scuffler is an impertinence among gooseberry bushes except it be one width of the scuffler up the centre of the rows set six feet apart. I do all cultivation under and immediately about the bush with a long handle shovel, ground sharp, selecting one well set down on handle. This is a good shove hoe.

I can account for the Champion not losing its fruit only by its tremendous vigor. One bush will send up from a hundred to a hundred and fifty suckers two feet long, in one season.

Thinning will no doubt be a remedy for this falling if my contention is correct, but where one has hundreds or even thousands of bushes this is not practicable. I have been trying to accomplish the same thing by pruning, and it is certain that larger fruit has been the result and less mildew another; this may be because the spraying mixture can be got to all parts of the bush, but one thing is certain, when mildew makes its appearance the fruit on sheltered branches suffers most.

Pruning.—I now prune my bushes in the fall, after the leaves have fallen, or are dead. All suckers, except from two to three for renewal, are cut away. I have had very few of these to cut away this fall. From six to eight stems are left to a bush and these stems are cleaned of all branches one third the way up. The heads are then thinned out so that the hand can be pressed freely among the branches without being torn. Each of the stems has now the appearance of a little tree. In the month of June all suckers are cut away except renewals and the heads again thinned, cutting the branches close to the stem.

Questions relative to mildew, comparison of varieties, etc., will be answered in the near future by your permission. Of course I shall be pleased to have the opinion of others upon this subject of the "Falling of Gooseberries."

CENTRAL EXPERIMENTAL FARM NOTES.—XX.

BY PROFESSOR W. T. MACOUN, OTTAWA.

WINTER set in here on November 14th, and four inches of snow fell on that date. This has been gradually increasing in depth until now there is more than a foot on the ground, making a fine cover for herbaceous plants and protecting the roots of trees and shrubs. The weather on the whole has been fine and moderately cold.

Lime Wash.—We recently made the final inspection of the trees sprayed with lime-wash last winter for the eradication of Oyster shell bark louse, and with few exceptions very few scales were left on the trees. This has proven a very satisfactory remedy here and is so cheap and simple in preparation that it should be used by all fruit growers whose trees are infested with bark lice. The experiments tried last winter were with two pounds of lime to one gallon of water, and with one pound lime to one gallon of water, and also with the addition of one pound salt to five gallons of water. As a result of these experiments it has been found that if the lime s fresh and good, one pound to one gallon of water is a sufficiently strong mixture to use. The addition of one pound of salt to five gallons of water made the trees brighter and cleaner looking, but it was not found to be necessary in removing the scales. The mixture should be applied in the autumn or early winter.

Sunscald.—One of the most serious obstacles to successful apple culture in Eastern and Northern Ontario, in the province of Quebec, in some parts of Nova Scotia and New Brunswick, and probably to a limited extent on Prince Edward Island, is what is commonly known as sunscald. The usual form, and that which does most injury in these parts of Canada, is first noticed during the spring or early summer. Trees which have not been long planted are usually most affected by it, but older trees do not escape it. The unhealthy appearance of the bark and wood, on the south and south-western sides of the trunk of the tree and on the larger branches, is the first indication of the injury. Afterwards the bark dries up and falls away. Trees are often so badly affected that they die. This injury occurs during the latter part of winter or very early in spring. It is generally supposed that it is caused by the alternate thawing and freezing

of the sap on the sides of the tree most exposed to the sun. Very often there are warm days during the month of March and the sun shining on the trunk of the tree thaws the sap. A severe frost at night freezes it up again and this may occur several times. This alternate thawing and freezing either separates the bark and the cambium from the trunk of the tree or injures the wood tissues so much that growth is prevented and these parts die. If the tree is badly sunscalded it is so weakened that it dies before the wound can heal over, or very frequently the same season.

Prevention. This injury may be prevented to a large extent by only planting trees which are headed low, thus exposing but a short trunk to the rays of the sun ; also by inclining the young trees somewhat to the south when planting, thus preventing the sun's rays striking the trunk except for a short time. Where the trees have been planted and are liable to become sunscalded, the trunks may be protected by using a veneer of wood which encircles the trees, thus preventing the rays of the sun from striking the trunk. It should be loose so that there will be an air space between it and the tree. The ends of it can be fastened together by means of wire or twine. Another protector is made of finely meshed galvanized iron netting which is more permanent than the wooden protector. In outlying districts where these protectors cannot be purchased, a good substitute may be made out of birch bark. Building paper tied around the tree is also useful. All of these protectors are effective in preventing the ravages of mice. Cornstalks, boards, and many other things may be used to protect the tree from sunscald. Nothing, however, that will be likely to harbor mice should be used. These protectors should be put on in the autumn. When a tree has been injured by sunscald the injured parts should be carefully cleaned away and the wound covered with grafting wax or paint. If the tree is young and likely to suffer, it should be protected in the manner described above.

The tree protectors used at the Central Experimental Farm are made of elm. They are of two sizes, one kind being thirty inches long and twelve inches wide, and the other twenty inches long and eleven inches wide, and have proved very satisfactory in preventing sunscald and injury from mice. They were procured in Minnesota and Kansas and are sold at $6.00 per thousand, although I have been informed they can be obtained for less.

There is another form of sunscald which appears to be a summer scald. When the weather is very hot in summer large limbs, which are exposed, are often scalded apparently by the fierce heat. This probably occurrs most frequently when there is not a good circulation of sap in the tree and when the tree is making very little growth. It also often occurs after too severe pruning. Limbs which have been protected by the foliage from other limbs are suddenly laid bare after heavy pruning. The bark on these limbs is not as tough as that of limbs which have always been exposed to the weather and it cannot withstand the heat of the sun and sunscald occurs. Hence, trees should be kept vigorous and pruning be done very carefully.

A NEW AND EFFECTIVE SPRAY.*

LIME, SULPHUR AND SALT.

VIEWS OF MR. GEO. E. FISHER, INSPECTOR.

IF we could discover a cheap and effective spray that would combine the qualities of both an insecticide and fungicide, it would certainly be a great relief to our fruit growers.

Whale oil soap is very expensive, when a large orchard is to be treated, costing, at the very lowest count, over $3.00 per hundred pounds, and while crude petroleum is an effective insecticide, it must be applied with great care or the trees will suffer injury.

The appointment, by the Department of Agriculture, of Mr. G. E. Fisher as provincial inspector of San Jose Scale was a most judicious one, for this gentlemen is possessed of such tenacity of purpose and thoroughness of investigation, as is gaining for him a mastery of details, superior even to many persons of professional pretentions.

In his opinion, the spray of lime, sulphur and salt, used with success in California, will be of great service to us, possibly displacing the expensive Bordeaux mixture, and proving effective both for destroying insects and fungi. He does not advocate a winter application, but advises the first spraying as late as possible before the opening of the buds.

The following report of his experiments was given us by Mr. Fisher and will be of great interest.

"**Lime, salt and sulphur,** the popular Californian remedy, was tried and gave very encouraging results, both in killing the scab and in cleaning up the tree, under what are commonly accepted as most adverse weather conditions. Fifteen large peach trees were treated with a mixture of the proportion of thirty-five pounds lime, fifteen pounds salt and fifteen pounds sulphur, with enough water to make forty gallons of wash. This

FIG. 2246. Showing tree treated on one side; appearance when dormant. The right side of the tree shown was sprayed and the left side was unsprayed.

[* The spray used in the illustrations is the Bordeaux, but the lime, sulphur and salt appears to be equally effective and much more economical.—ED.]

FIG. 2247. Showing the condition of one of the trees sprayed on one side at the time of picking the fruit. The leaves have been cut away with the pruning shears to enable the photograph to show the fruit upon the sprayed half (right side) of the tree, and the absence of fruit upon the unsprayed half (left side). The sprayed half matured 284.8 pounds of the finest peaches; the unsprayed half matured only 13.3 pounds. Over 1,100 peaches were thinned from the sprayed half of this tree to enable the limbs to bear the crop, while the unsprayed half was unthinned except by curl.

was boiled in an iron kettle three hours and the sulphur thoroughly incorporated. It was applied to the trees while yet very hot and covered them completely. The spraying was finished in a light rain, which increased to a heavy rain and continued all night and the next day. This was followed during the rest of the month, by alternate fine and rainy weather, making altogether the wettest May I ever knew. It is generally believed that the success of this treatment in California is due to the absence of rainfall and that, in any case, a couple of weeks of dry weather, immediately following the application, is indispensable to its success. This work was closely watched by the neighbors all the way through and the result carefully observed, and the consensus of opinion is that there was an entire absence of leaf curl, the foliage was plentiful and well developed, the wood brighter and cleaner, and the fruit larger, higher colored and more plentiful than in adjoining trees.

In this experiment, as in the others, the treated row reached across the orchard and all varieties present were included.

Encouraging Results.—The very promising indications from this St. Catharines work led to an extended enquiry as to what use had been made of this remedy. The replies are disappointing and show distinctly that the favorite remedy which, in many parts of California has superseded all others, has not received even so much as a fair trial in the East. It was tried experimentally last spring by Dr. Howard, Chief Entomologist at Washington, D. C., and by the growers in Burlington County, New Jersey, and they report unexpectedly good results.

FIG. 2248. Showing tree treated on one side; appearance after development of curl in the spring.

An all-around remedy.—The experience with this mixture in the East is too limited to justify speaking very definitely about it, but as an all round remedy, insecticide and fungicide, it promises so remarkably well that we shall be pleased indeed to have as many join us as are willing, in making further experiments next April and report the results.

The proportions of the ingredients used for this work may be varied to almost any extent. A good pump will spray two pounds of lime to the gallon of mixture, without clogging, and, if the lime be good and properly slacked, there will be no settlings in the barrel. In his experiment Dr. Howard used thirty pounds of lime, twenty pounds of sulphur and fifteen pounds of salt, in fifty imperial gallons of mixture, which with our lime makes a light covering.

The proportions recommended from California are thirty-five pounds of lime, fifteen pounds of sulphur and fifteen pounds of salt, in fifty imperial gallons of mixture, and the California people suggest that a larger proportion of lime and sulphur than they use might be advantageous in the East and also that with them salt is not an essential.

In our recent experiments to determine the respective qualities of gray and white lime, their behavior in the process of preparation, application to the trees and subsequent durability, we made a large number of tests, in some of which salt was omitted, ranging from one-half pound to two pounds of lime to the gallon of mixture. So far as we have gone, white lime slacks stronger than the gray, but no difficulty was experienced in applying either. A wash, containing only one-half pound of lime to the gallon of mixture, makes a very light covering indeed; the sulphur remains exposed, is readily wiped off by the finger and would likely be removed by rain or even a high wind. A wash, having two pounds of lime to the gallon of mixture, makes a covering so thick and heavy that it breaks and scales off, when the trees are swayed by the wind. After numerous tests, we have fixed upon thirty-five pounds of lime, fifteen pounds of

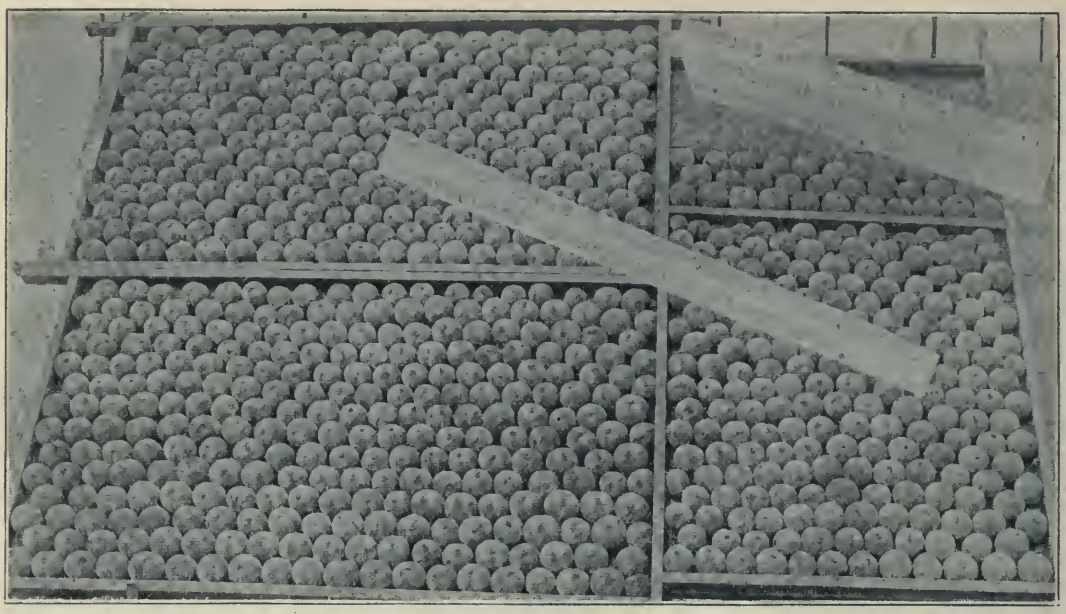

FIG. 2249. Peaches gathered from the tree sprayed on one side shown in the preceding plate. The fruit shown on the two drying trays on the left, together with that in the lower compartment of the tray on the right, was gathered from the sprayed half of this tree. The peaches shown in the upper right hand compartment were all that matured on the unsprayed half of the same tree. The sprayed half bore 718 peaches, weighing 284.8 pounds.

FIG. 2250. Showing a limb of the sprayed half of the tree, after the removing of the leaves with pruning shears. A good idea of the size and perfection of this fruit may be obtained from the plate. The color was strikingly high and rich. The size of the fruit is further shown by the fact that the peaches averaged 252 per hundred pounds.

sulphur and ten pounds of salt in thirty gallons of mixture as the proportions most likely to give satisfaction. This does not break up and makes sufficient body to hold the sulphur beneath it in contact with the bark.

In California, the cooking is mostly done by steam generated in furnaces for the purpose and piped to barrels, which is much more convenient and economical than cooking in a kettle over the fire, as we are obliged to do.

In preparing the mixture we used a large kettle, in which was placed about fifteen gallons of water, to which the sulphur and salt were added and then brought to the boiling point. Then the lime was thrown in adding hot water from another kettle if necessary to prevent burning. When the lime was slacked, we added still more hot water, boiled two to three hours, increased the quantity to thirty gallons with hot water and applied while hot.

With suitable working appliances, the preparation of this mixture is not so serious an undertaking as it may appear. At no time will the mixture work as well as when perfectly fresh.

HOW TO HUSTLE TOMATOES.

HE horticultural department of the Ohio State University has had considerable success in raising tomatoes, and Mr. W. S. Turner thus describes in the Agricultural Student the method used :

Sow the seed (Livingston's Beauty) the first week in February. Transplant first week in March, two by three inches. Again in cold frame to harden first week in April, four by six inches. Plant in field as the weather will permit from 5th to 15th of May, setting the plants with spade nearly to the first blossom stalk. It does not injure them in the least to be set slanting, four by two feet. Mulch with coarse manure as you plant. As soon as plants are well established, prune all side branches off, leaving blossom stalks and terminal bud. Make a trellis for each row, using one iron piping (obtained from old iron dealers), cut into posts of six feet in length, drive in ground two feet, sixty to seventy feet apart in rows.

Stretch wire to each row, beginning at further end from wire coil or spool and wrapping once around each interweaving post, about two or three inches from top to end. Use a plastering lathe for a stake, one to each plant ; drive into the soil lightly and fasten to wire with double pointed tacks. Continue pruning the plants and tying to lathe as they grow ; twice below the wire and once above it. Then let the plant branch.

Advantages of the method are : The fruit ripens two or three weeks earlier than ordinary plants of same age. From twenty to forty per cent. larger than ordinary fruit. A larger yield per acre by ten to twenty per cent. Fruit easy to pick and always clean, less liable to rot.

Disadvantages are : It requires more labor and more plants per acre. The fruit has a tendency to be more irregular.

POINT PLEASANT PARK, HALIFAX.

BY PROFESSOR F. C. SEARS, WOLFVILLE, N. S.

ONE of the most beautiful spots in all Nova Scotia (and her sons and daughters think there are many beautiful spots in the province), is Point Pleasant Park, of Halifax, better known as "South Park." It comprises

FIG. 2251. "There Are Miles of Splendid Drives."

somewhat over two hundred acres within its borders and occupies the extreme end of the peninsula upon which the city of Halifax is built. The land is owned by the Imperial Government, but in 1873 was leased to the City of Halifax for a period of nine hundred and ninety-nine years, at the not unreasonable rental of one shilling per year.

The key note of the park is naturalness, and one is surprised and delighted on leaving the street car and walking the comparatively short distance necessary to reach the Park to find how completely his surroundings have changed. From the hustle and hurry of the city he has passed to the quiet and restfulness of the country. And what a beautiful country. It is the original, virgin forest, with only enough change to accommodate those who wish to see and enjoy its beauties.

The prevailing trees are the conifers, spruces and pines and hemlocks, but there are also many birches and poplars in certain parts, growing naturally, besides several kinds, especially maples, which have been planted by those in charge. And among and beneath the trees are quantities of native shrubs of all kinds, and more beautiful than all else, the native ferns of Nova Scotia. Add to this a profusion of wild flowers in their seasons and one has a variety of charms such as is not often met with.

There are miles of splendid drives which take one to every part of the park; now skirting the shore and giving one a view of the water with the ships coming and going, and all the beauties and attractions of the sea; then passing through some thick wood where one feels as though he were miles from any human habitation; or again sweep-

FIG. 2252. "Now Skirting the Shore and Giving One a View of the Water."

FIG. 2253. "Or Again Sweeping Under Grand Old Pines."

ing under grand old pines, with glimpses through the open woods of the outside world. Besides these, numberless walks intersect each other in every direction, making it possible to reach almost any desired spot with a bicycle if one is thus mounted.

There are few buildings within the park and such as there are fit harmoniously into their surroundings. It has been said the park is leased to the City of Halifax by the Imperial Government, but the right to use the park, or any part of it, for military purposes is still maintained by the Government, and as if to remind the writer of this fact he finds fortifications in several parts of the park. The cannon are pointed toward the open sea and piles of cannon balls stand in readiness as though hostile warships were expected at any moment. But the most interesting building of all is the "Martello Tower," a round stone building of mysterious and antiquated appearance, which stands in the midst of an open spot in the Park, like others both in England and America. It was built in those days when England dreaded a landing of Napoleon upon British Territory, and it is to these buildings that Campbell refers in his "Ye Mariners of England,"—

> "Britannia needs no bulwarks—
> No towers along the steep,
> Her march is o'er the mountain waves,
> Her home is on the deep."

Another most interesting feature of the Park is the abundant growth of Scotch heather in a certain part, where sixty years ago a Scottish regiment, fresh from the land of the thistle and the heather, spent some time in tents while their barracks were being repaired. Here it has grown and thriven, with only enough attention from the authorities to see that it is not carried away entirely by the ever present tourist with a thirst for souvenirs.

So long a time has elapsed since the Park was established that most of its founders have passed on to their reward. Yet their names should ever be held in grateful remembrance by those who enjoy the beauties which they have preserved,—Sir John S. Thompson, Sir William Young, Judge Ritchie, Hon. William Stairs and John Doull, Esq. Their work was "a labor of love" and certainly the result is a "vision of loveliness."

FIG. 2254. "The Martello Tower, a Grand Stone Building of Mysterious and Antiquated Appearance."

FATHER BURKE'S IMPRESSIONS OF US.

IN the Agricultural press of the Maritime Provinces, where he is always a welcome visitor, our friend, the Reverend Father Burke, of Prince Edward Island, has been giving his impressions of our late general meeting, our people and our province. Needless to say those clever articles leave a very favorable impression of us in the public mind. We have taken the liberty of transcribing portions of an article which is to be followed by others from his pen in the Maritime Homestead.

"If you require my impressions of the Cobourg Fruit Grower's Convention, I can only tell you that never meetings more intelligent, advanced and enthusiastic, discussing purely horticultural matters, did I attend anywhere."

* * * * * *

Here Father Burke praises Ontario for its encouragement to agriculture, citing its public grants and what they effect.

A Pleasure to Meet Them.

"A people or class of people, so generally favored, ought to have pretty complete institutions and good men as a result of their operation. Ontario farmers, or the representatives of them I met at Cobourg, are certainly a wide-awake, well-informed, progressive class. It is a pleasure to come in contact with such people, a greater pleasure and satisfaction than to meet good men of any other calling, for, after all, the country must depend on the farmer and its hope is in his proper education. I was delighted to remark with what a grasp of principle, what confidence, what readiness of expression, what conciseness and accuracy of speech, the speakers as a rule, brought to the discussion of the varied subjects which the scheme of convention matter suggested during those three days of three sessions each, in which the Association sat."

* * * * * *

The programme and discussions are here cited :

5,000 Members.

"The Fruit Growers' Association of Ontario has a grand membership—something like 5,000, I believe ; and that same is an assurance of how highly it is regarded in the country and its authoritative place in the scheme of agricultural information. From one end of the great province to the other, from the United States, from Quebec, from Nova Scotia and Prince Edward Island, came lovers of horticulture, to sit at the feet of those men of Ontario who had made fruit-growing one of the most promising industries of the country and its chief hope.

Canadians Equal to the Best

was a kind of personal satisfaction in the comparisons to be made. Good men, the best the Great Republic could furnish ; men of deep learning and wide experience, were present to lend the light of their counsel on all matters which engage the mind of the horticulturist ; they were fresh, too, from the object lessons which the Pan-American Exposition so well taught ; and still, excellent as they were, expert men as they were, practical men as they were, progressive men as they were, the young men of Ontario formerly engaged in the scientific work of the colleges, and, may I add too, many of the common growers from the farms, were really their equals in all the wide range of horticultural knowledge. I was proud of the Ontario horticulturist, proud of the institu-

tions which turned him out, and proud of Canada, which, although embarking late in those pursuits, had already attained a position so high and honorable among agricultural communities. I only regretted that in some of her provinces, in New Brunswick and Prince Edward Island especially, the same advantages which Ontario afforded were not within every young man's reach, the same emulation was not aroused, the same patriotic sense of duty to the agricultural interests, on the part of the local administrations was not manifest. However, we must live in hopes. Our day will come."

* * * * * *

A Fruit Growing Region.

"The town of Cobourg, too, is in the midst of one of the best apple districts of Ontario; and, in springtime, the air must be redolent with the sweet scent of the blossoms. It is not wonderful, then, that everybody in Cobourg is interested in trees and flowers and fruit and all the concerns they give rise to. On this account the night sessons, known as 'Popular Meetings,' were universally attended, the last being so packed that standing room was at a premium and many were turned away at the doors. Such interest is certainly very encouraging, augers well for the work and affords a means of conveying information and stimulus where otherwise they could not be made to reach.

The Town Turned Out to Welcome Us.

Then all the local celebrities were out in force—the mayor, the sheriff, the district president, colonels as thick as if one were in Kentucky, senators, M.P.'s, M.P.P.'s, all anxious to lend their presence, their voices, their assistance to the popular cause. And such galaxies of ladies! Who shall enumerate them? Let it be said, also, that the hospitality of Cobourgers is the heartiest and most princely to be anywhere enjoyed.

* * * * * *

Father Burke then goes at length into the "burning question of cold storage," as he terms it but of this the facts are now known sufficiently and while he speaks of the case made by Professor Robertson, "that matter of systematic exportation," he declares that "the the debate on cold storage was not satisfactory and left the impression that there was still much to be done before we reach the ideal."

Speaking of packing, Father Burke gives out his only unfavorable impression of us:

"If half of what was said of the latter were true, one ought to button up his pockets carefully when in Ontario. There was an awfully bad word for the fruit packed. Professor Robertson dealt with this matter without gloves, as it affected transportation and the old country markets—honesty is vital to those matters—and with the cold facts in hand, made a most unenviable case against the Ontario packer. Of course there was a deal of shifting of responsibility between the local and general buyer; but even with all this a feeling of shame pervaded the gathering."

* * * * * *

The Law Will Take its Course.

"The convention declared for an honest, impartial, intelligent enforcement of the Marks' Act as it stood on the statute." Father Burke declares in conclusion; and with the comment, "This was satisfactory," promises further articles on the meeting.

GREENHOUSE AND WINDOW.

THE GREENHOUSE.

THE propagation of bedding out plants will be one of the main features of February work in the greenhouse. Coleus, ageratum, alternanthera, heliotrope and cuttings from similar plants will root readily now in sand. Shade them from the hot sun for a few hours at mid-day.

Carnation cuttings root best in sand in shallow boxes, two inches deep Place the boxes near the glass, in a cool part of the greenhouse, 50° at night and 60° in the day time suits carnation cuttings splendidly. Keep the sand moist but not soddened with water.

All ferns should be repotted at once, if not already done. January is the best time to re-pot ferns, before the young fronds have made much headway.

Cyclamens and Freesias, that have done flowering, should still have sufficient water to keep the soil fairly well moistened. Pick the decayed flowers, and seed pods (if any) from these plants; it will help to strengthen and mature the bulbs for next season.

Annuals.—It is a little early for sowing annuals even for early flowering, but a few pots of petunia and verbena seed can be sown toward the end of the month. Lobelia seed should be sown at once so as to secure good sized plants for hanging baskets, window boxes, etc. Cuttings of all trailing plants for hanging baskets, etc., should be started without delay.

Azaleas that are out of flower should be syringed every day to promote new growth, and keep down red spider. Fuchsias should be syringed daily.

Use more copious supplies of water for syringing purposes, as the heat of the sun increases. Syringe early in the day, and on warm sunny days if possible. Use plenty of water on the floors. Evaporation of moisture is good for the plants, and keeps down insect pests.

Easter is early this year. Easter lilies to be on time will require to be brought into a warm part of the house.

Holland bulbs for Easter flowering should be in the greenhouse now. Better be a week too early than a week too late. The flowering period of plants can be retarded or the flowers retained much better as a rule, than they can be forced into flower. Undue

forcing is dangerous, even by experienced plant growers.

Give a little air on hot sunny days, 70° to 75° in day time and 55° to 60° at night is a good temperature at this season of the year. Close ventilators early in the day.

THE WINDOW.

Plants in the window will begin to feel the increased heat of the sun. The latter will necessitate a close watch being kept for insect pests. The best way to avoid trouble with the insect pests is to try and prevent them from making their appearance at all. Keeping all growing plants such as fuchsias, cyperus, geraniums, calla lilies, etc., fairly well moistened at the roots, and syringing or sprinkling the foliage of the plants two or three times a week with luke warm water, are about the safest preventives of the appearance of insect pests. A little weak tobacco water in the water the plants are syringed with, applied once a week, will prevent the attacks of some of these enemies of plant life. No plant can flourish when attacked by insects, and it is very hard to get rid of them when once they have gained headway.

Chrysanthemum plants, that are wanted to be kept for cuttings, should be kept in a rather cool temperature, about 50° suits them. They require less water now than when in flower.

Seed Sowing.—There are few seeds that can be sown to advantage just yet, except perhaps those recommended for the greenhouse, such as petunias and verbenas, both of which require quite a length of the time before good sized plants will be produced.

Cold Dips.—Watch out for sudden cold dips, February and March are treacherous months in this respect. The hot sun in the day time often lures the plant lover into a feeling of false security and induces neglect in taking proper precautions against the extreme cold often experienced at night at this season of the year. If by any chance your plants should be frozen, place them at once in a warm corner of the room where the temperature is a few degrees above freezing. Cover the plants up carefully and keep them in the dark for twenty four hours until the frost is out of them. You may perhaps in this way save them, if not frozen too badly. I consider this treatment preferable to deluging the plants with cold water as is sometimes recommended. Even if the latter course is taken with the plants, keeping them dark for a day or so will help them materially. Avoid bringing plants that have been frozen into a high temperature, and keep them away from bright sunlight for a week or two after they have been frozen. They will also need less water for a time, until root action and growth have well commenced.

Hamilton. W. HUNT.

Petunias.—For pot culture quite as well as for lawn decoration, both the single and double petunias are very suitable. Considering the ease with which they may be grown, the beauty and freedom of their bloom, especially in the single varieties, and their long season, it is indeed hard to find any plants better suited to the amateur's needs. To raise pot plants from seeds select your seeds in January and sow at any time up to March. Petunias have the smallest seeds and in sowing should be covered very lightly. It is a good plan to sow in a pot, covering the pot with glass until the seedlings are up. With the use of the glass less water is necessary which is an advantage in the case of such fine seed. As soon as the seedlings are up so that they can be handled, they should be pricked out into a pan, afterwards giving each plant a two-inch pot to itself, later shifting on as growth demands.—*Vick's Magazine.*

THE WINTER'S WINDOW GARDEN.

BY E. E. REXFORD.

WHAT TO HAVE IN IT AND HOW TO TAKE CARE OF IT.

THE only fuchsia which can be depended on for flowers in winter is the variety called speciosa. This is not as rich in color as most of the summer bloomers, but it is a really beautiful plant.

The abutilons, popularly known as flowering maples, because of the resemblance of their foliage to that of our native maple, are excellent bloomers, and require very little care. Their flowers ase pedant and bell-shaped, some red, some pink, some yellow and some pure white.

The calla is a general favorite. Its large, rich foliage makes it an attractive plant without flowers. Add these to it, and it becomes a most ornamental feature of any collection. This is one of the plants for which the general rule given for watering must be modified somewhat. It likes a good deal of water at its roots, and a daily application will generally be needed.

The Primroses.—For winter flowering, we have few plants more satisfactory than the Chinese primrose, Primula obconica and Primula forbesii—better known as the baby primrose—all members of the same family. The Chinese primrose is the most difficult one of the three to grow well, but the amateur will find but little trouble with it if she is careful to pot it so that the crown of the plant stands well above the soil. If it is low enough for water to stand about it, decay is pretty sure to set in. Let the soil slope towards the sides of the pot. The others will not require special treatment in this respect. Primula obconica has flowers of a pale lilac, often nearly pure white, with a yellow-green eye, and they are so freely produced that a healthy plant is nearly covered with them. They have a woodsy air about them that gives them a special charm to those who love our native flowers. The "baby primrose" is one of the most delightful of all flowers, and one of the very easiest to grow, and grow well. Plants procured now, or a month or two later, will soon come into bloom, and throughout the winter they will be a mass of dainty rosy blossoms with a yellow eye—lovable little things that will attract more attention and receive more admiration than anything else your window garden will be likely to contain. Primula obconica has great quantities of very fine roots, and must be given a good deal of water. These plants do well in comparative shade.

Pentas lanceolata is quite a new plant, but it deserves a place in all collections. It has a star-shaped flower of purest white. Its flowers are borne in clusters, and bear considerable resemblance to the bouvardia which everybody admires, but which so few succeed in growing, even in a greenhouse. Pentas is a good substitute for it, and has the merit of being easy to grow.

The Paris Daisy—known as Marguerite abroad—is seldom seen in the window garden, but it would be extensively grown if its merits were more generally understood. It literally "grows like a weed." There are two varieties, one having white flowers, the other flowers of a soft, sulphur yellow. They so closely resemble our native daisy that they are often mistaken for it. To those who have a friendship for the daisy this will be a strong argument in their favor, and may induce them to give these plants a

place in their collection. They will never regret doing so. As cut flowers they are very valuable, as they last for days. Young plants soon become large ones, and next summer they can be planted out in the garden, where they will continue to bloom during the entire season, and new ones be started from them for the coming winter.

While the ordinary carnation does not take kindly to cultivation in the window of the living room, the Marguerite strain does, and we often find among plants of this class, grown from seed, in the outdoor garden, varieties equal in form, and size, and color, the carnations grown by our florists so extensively, and far excelling them in freedom of bloom and vital force. This class blooms late in the season, when grown in the open ground, but it will show, by its first flowers, what the general character of its blooms are to be, and the most desirable plants can be lifted and potted for winter use. Do this as early as possible, that the plants may become well established before being taken into the house.

The Single Petunia of the garden will be found one of the most satisfactory of all flowers for winter blooming. It is able to make a window resemble a bit of last summer's garden, so bright, so cheerful is it. For every little attention you bestow upon it it will laugh back at you in blossoms of violet and pink, and white, and you will soon be on most intimate terms of friendship with it, for it will win its way to your heart by its pleasant ways and looks. When the plant seems to have exhausted the flowering capacity of its branches, cut them bacb to within five or six inches of the soil, apply a little fertilizer, and in a short time you will see naw branches growing, from which you can expect a bountiful crop of flowers, a little later.

The Sword Ferns.—Among the most desirable of plants grown for foliage I would name the sword and Boston ferns. The Boston fern is the ordinary sword fern on a little larger scale. That is about all the difference one can see in them. These will grow wherever a geranium will, and their luxuriance will prove a constant delight to the owner of every window garden. Do not attempt to grow the adiantum ferns in the living room, for they will prove failures there. The atmosphere will be too hot and dry for them.

And do not attempt to grow roses there, as you will be tempted to do. While it is possible to grow some varieties of this beautiful flower in the living room, it is not an easy matter to do so, and success will only come after one has served an apprenticeship at growing less exacting plants. Roses are sure to be infested with aphides, red spiders, and other insects which are extremely harmful to plant life, and they will soon spread to all your plants from your rose bushes, thus making it necessary to wage a constant warfare for their extermination. Nearly all the plants I have advised are comparatively free from the attacks of insects, unless brought into contact with them as bred on other plants.

Turn your plants frequently, that all sides of them may get an equal chance at the light. Pinch off the end of its branches, if a plant does not grow in compact, bushy shape, and keep them pinched off until other branches start. By persisting in this treatment you can make almost any plant grow as you want it to. Do not neglect the plant while it is growing. Then is the very time when it needs training. If let alone until it has developed, you will find it almost impossible to bring it into symmetrical shape. And much of the energies of the plant will have been wasted in the growth which is cut away. Regulate this growth, as it goes on, and there will be no waste of plant energy.—*Home and Flowers.*

THE SHRUBBERY IN WINTER.

IN another column a correspondent calls attention to some winter effects in the wild shrubbery which interested him, and, perhaps, it is worth while to repeat what we have often said—that when home-grounds are planted there are many cases where more attention should be given to their winter aspect. Where a house is occupied in summer only, the principal aim should be to make it attractive at that season. There are many trees and shrubs which are conspicuously beautiful in spring and autumn, and, of course, there are places were the selection of species and varieties should be made with special reference to these seasons. But where a country house is occupied in winter it can readily be seen that in some part of the grounds commanded by the windows of rooms appropriated for winter use provision should be made for the prospect at this season. In the middle of this century it was not uncommon to have a glade or lawn in such a position bounded by spruce, firs, hemlocks, pines and other conifers with such broad-leaved evergreens as kalmias, rhododendrons, American hollies, and some herbaceous plants with persistent foliage, like yuccas, for example, and the whole brightened by a few shrubs with colored fruit, like the Carolina rose, black alder, cockspur thorn, snowberry and bittersweet. Such an arrangement has some merits, although the idea that this green foliage brought in a touch of summer when January was at its bleakest was rather fanciful. Any effort to produce summer scenery in winter must be a failure, as, indeed, it ought to be, for what is desirable at a particular season in the landscape is an effect which will harmonize with the prevalent tone of that season, rather than one which conflicts with it. As a matter of fact, however, there is no hint of summer in the winter aspect of evergreens. In freezing weather their darkened foliage only emphasizes the strength of the cold, and the particular human interest they have at this season is their hospitable suggestion of shelter against the driving winds. Whatever is especially home-like and companionable or genial in their winter appearance is not that they remind one of summer verdure, but that they are sturdy enough not only to brave the wildest weather, but to give us some protection against its blast.

Following the fashion imported from the mother country, coniferous trees were too exclusively planted in the early years of the century, and we can all remember country houses which were half-smothered in summer under the gloom of their heavy foliage. Perhaps the reaction against this has been too decided, and some of these trees which are beautiful at all seasons are too much neglected. Nevertheless, there is an abundance of beauty and variety to be found in deciduous trees and shrubs at this season, and in any scheme of planting for winter effect in this climate they should have the largest place. Most trees have a beauty in winter which is quite as distinct and individual as it is in any other season. Indeed, this is the best time for studying the peculiar structure or framework of a tree—that is, for noting how its branches diverge and the manner in which they break into spray. The special characteristics of a particular species, whether of dignity or grace, are shown as well when the trees are stripped of their summer garments as at any other time, and never until leaves are gone can we mark the peculiar beauty of the different

figures made by the interlacing branchlets against the sky. There is no need to speak of the endless varieties in the shade and texture of the bark, both of trunk and limb and spray, and it is well known that the richest colors in a winter landscape are those of the warm browns of a distant wood. The colors of the small twigs are especially varied, too, and the tinted mist which hovers over a shrubbery a few hundred feet away is collected from the mingled colors of the bark on the smaller branches.

This brings us to a point in planting shrubbery for winter effect which we wish here to insist upon. In former articles we have given lists of various shrubs which are ornamented with brightly colored fruit until midwinter, but we have not so often named those whose bark lends a pleasing color to the short days of the year. The glossy green branchlets of the kerrias, the golden bark of the willows which warms into still brighter yellow with the approach of spring, the ashen gray of some of the viburnums and the scarlet twigs of the dogwoods make pictures of unfailing beauty, either against the glittering snow or the brown earth. Taking the Cornels alone one is surprised to find the variety of form and color they display at this season. Our common Red Osier, Cornus stolonifera, with its broad leaves, pale flowers and bluish white fruit, is ornamental all summer. Its leaves turn purple and yellow in autumn, and now its purple-red branches sustain its beauty in midwinter. There is a variety of the plant, too, with golden-yellow bark, specimens of which have been exhibited by Mr. Warren Manning at the Massachusetts Horticultural Society, and it is distinct and striking.

Cornus alba, the common European Red Osier, which is often sold by nurserymen as Cornus sanguinea, is another bright-barked plant. It is a variable shrub, and one strain, which is called alba Siberica, has stems of almost vermilion. Cornus circinata, too, one of our native species which is found on wooded hillsides, in addition to its beautiful flowers and light blue, has red and yellow stems which are sometimes finely mottled, while Cornus candidissima has an ashen gray bark of a singularly soft texture. Certainly a group of these Cornels properly arranged gives a pleasing stretch of varied color, and with judicious selections from other families, by harmonious contrasts, a most interesting feature can be added to our winter landscapes.—*Garden and Forest.*

COLEUS IN WINTER.

COLEUS plants, as a rule, are not a success in an ordinary window in the winter season. For several years I experimented with them, using both old and young plants, keeping them cool or hot, moist or dry, and finally hit on a plan by following which they are a complete success every year. My experience has been that old plants generally do not do well the whole winter through. When the main stock becomes thick and woody it is time to discard it and begin afresh.

My plan is this: Just before the first killing frost in the fall, I go the rounds of my coleus plants taking about three slips of each variety. These are placed in glasses of water to root; when nicely rooted they are potted off into three or four inch pots in a soil composed of two-thirds garden soil (not too rich) mixed with one-third sand. I find a very rich soil is not conducive to extra bright color in the leaves and I have known the plants to be grown beautifully bright in pure sand. I keep two plants of

each kind and they remain in the same pots until spring. They are placed in the highest shelf in my bay window, which makes them six feet from the floor and one and a half feet below the top of the window. It is of necessity a very hot place as, in addition to the heat from the stove, the sun beats in on them all the forenoon and half the afternoon of every sunny day.

As the plants begin to grow, I pinch out the ends of the shoots to make them branch freely until about February 1st, when I let them grow for slips. They are uusally large enough by March 1st, when I put them in water to root. In a few days the roots appear and they arh potted off as before. I give the new plants the upper shelf then to get them in good condition to bed out in May and set the old stock plants aside. Some of the old plants will branch out again and raise another lot of slips, which are discarded at once.

From the time the slips are potted off in the fall until March, that high shelf is my particular pride. The gorgeous colors and soft velvety texture of the leaves are as beautiful as flowers.

Some of the best varieties are Golden Bedder, Charm, John Goode, South Park and Golden Crown for yellow sorts; Louise Chretien, Ruby and Moonbeam among white and pale tints; Crisp Beauty, Geo. Simpson among light, red and pink sorts; Dr. Koch, Brightness, Firebrand, Fire King and Midnight, crimson and maroon; Progress, Mrs. Hunt and Butterfly among mottled and shaded ones.

There are a few new varieties that are of a stronger growth, with leaves of immense size for coleus. I have not tried any of them but have seen them displayed in greenhouses and also at our last agricultural fair. Some of the leaves were five or six inches long and though the plants are handsome as decorative plants, they do not seem so appropriate or beautiful for bedding purposes as the old sorts. A specimen plant is a lovely sight, but a mass of them spoils the effect.

Coleus, as a rule, are remarkably free from insect foes. I never found any but the mealy bug on mine, but they can kill the plants in short order if they are left undisturbed a short time, as they seem to sap the life of the plant so that it wilts and falls over before one knows anything is the matter with it. Eternal vigilance is the best remedy, but when you find them on the plants the use of alcohol or whisky on them will kill them at once.

It is hard to give coleus too much heat but a chill will cause the leaves to fall off. Mine are watered three times a week during cold weather. Later in spring they need it every day. They are sprayed every morning before the sun is on them. To sum it all up, young plants, plenty of heat, and not too much water will give one a fine display of coleus all winter.—*Vick's Monthly.*

Flowers in the Window.—Lord Nelson once said something to the following effect:

"The best testimony to proper and happy management of household affairs is borne by the windows of the house. If flowers are to be seen through the well polished glass, one can be certain to find a good table and orderly children. The windows indicate the character of the inhabitants of the house."

The Canadian Horticulturist

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SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

OUR BOOK TABLE.

Old Time Gardens, newly set forth by Alice Morse Earle, a book of the Sweet of the Year, published by The McMillan Co., price $2.50.

This is a most interesting book to any one who is a lover of flowers and their associations with other days. The book is not intended to be one of instruction to those who wish for practical information about floriculture, but rather a book of diversion for one who already knows something about flowers. To give our readers some idea of the book, we quote from the chapter entitled, "In Lilac Tide":

"A flower opens, and lo, another year, is the beautiful and suggestive legend in the Catacombs. Since these words were written, how many years have begun, how many flowers have opened; and yet nature has never let us weary of spring and spring flowers. My garden knows well the time o' the year. It needs no almanac to count the months.

> "The untaught Spring is wise
> In Cowslips and Anemonies."

"While I sit shivering, idling, wondering when I can start the garden, lo, there are Snowdrops and spring starting up to greet me.

"Even in earliest spring there are days when there is no green in grass, tree or shrub; but when the garden lover is conscious that winter is gone and spring is waiting. There is in every garden, in every door yard, as in the field and by the roadside, in some indefinable way a look of spring. One hint of spring comes even before its flowers, you

can smell its coming. The snow is gone from the garden walks and some of the open beds ; you walk warily down the softened path at midday, and you smell the earth as it basks in the sun, and a faint scent comes from some twigs and leaves. Both speak of summer, not of spring ; and the fragrance from that Cedar tree is equally suggestive of summer. But break off that slender branch of calycanthus, how fresh and welcome its delightful spring scent. Carry it into the house with branches of forsythia, and how quickly one fills its leaf buds and the other blossoms.

"Viola tricolor.—For several years the first blossom of the new year in our garden was neither the snowdrop or crocus, but the Ladies' Delight, that laughing, speaking little garden face, which is not really a spring flower, it is a stray from summer; but it is such a shrewd, intelligent little creature that it readily found out that spring was here ere man or other flowers knew it. This dear little primitive of the pansy tribe has become wonderfully scarce save in cherished old gardens like those of Salem, where I saw this year a space thirty feet long and several feet wide, under flowering shrubs and bushes, wholly covered with the everyday, homely little blooms of Ladies' Delight. They have the partly colored petal of the existing strain of English pansies, distinct from the French and German pansies, and I doubt not are the descendants of the cherished garden children of the English settlers. Gerarde describes this little English pansy or Heartease in 1587 under the name of Viola tricolor.

" The flowers in form and figure like the violet, and for the most part of the same bignesse, of three sundry colors, purple, yellow and white or blue, by reason of the beauty and braverie of which colors they are very pleasing to the eye, for smell they have little or none."

"In Breck's Book of Flowers, 1851, is the first printed reference I find to the flower under the name Ladies' Delight. In my childhood I never heard it called aught else; but it has a score of folk names, all testifying to an affectionate intimacy, Bird's-eye ; Garden-gate ; Johnny-jump-up ; None-so-pretty ; Kitty-come ; Kit-run-about ; Three-faces-under-a-hood ; Come-and-cuddle-me ; Pink-of-my-Joan ; Kiss-me ; Tickle-my-fancy; Kiss-me-ere-I-rise ; Jump-up-and-kiss-me. To our little flower has also been given this folk name, Meet-her-in-the-entry-kiss-her-in-the-buttery, the longest plant name in the English language, rivalled only by Miss Jedyll's triumph of momenclature for the Stonecrop, namely, Welcome-home-husband-be-he-ever-so-drunk.

"These little Ladies' Delights have infinite variety of expression, some are laughing and roguish, some sharp and shrewd, some surprised, others worried, all are animated and vivacious, and a few saucy to a degree. They are as companionable as people, nay, more ; they are as companionable as children. No wonder children love them ; they recognize kindred spirits. I know a child who picked unbidden a choice rose, and hid it under her apron. But as she passed a bed of Ladies' Delights blowing in the wind, peering winking, mocking, she suddenly threw the rose at them, crying out pettishly, 'Here, take your old flower.'

"The dandelion is to many the golden seal of spring, but it blooms the whole circle of the year in sly garden corners and in the grass. Of it might have been written the lines:—

> "It smiles upon the lap of May,
> To sultry August spreads its charms,
> Lights pale October on its way,
> And twines December's arms."

" I have picked both Ladies' Delights and dandelions every month in the year.

"I suppose the common crocus would not be deemed a very great garden ornament in midsummer, in its lowly growth ; but in its

spring blossoming it is, to use another's words, 'most gladsome of the early flowers.' A bed of crocuses is certainly a keen pleasure, glowing in the sun, almost as grateful to the human eye as to the honey-gathering bees that come unerringly, from somewhere, to hover over the golden cups. How welcome after winter is the sound of that humming.

Catalogues. John A. Bruce & Co., Seed Merchants, Hamilton, Canada.

Robert Evans Seed Co. Ltd., Hamilton, Ont. Catalogue of Farm and Garden Seeds, 1902.

QUESTION DRAWER.

Pure Paris Green.

Mr. Bruner of Olinda, asks where to buy pure paris green. We would be pleased to have this information for our own use. Mr. Bruner says what he had last year was of no use at all. He wrote to the house in Toronto from which he purchased it, complaining and received the following reply :—

With reference to Paris green, we never sold so much as we have this year. In fact we supply the city with it for spraying purposes, and they say they never had such good green. In fact one-half pound Paris green to a barrel of water is not nearly sufficient, you ought to use three pounds to the barrel.

It is no wonder it was useless if so weak that three pounds was needed for a barrel of water!!

We would advise sending samples of Paris green to Pro. Shutt, of the Central Experimental Farm, Ottawa, asking for analysis, before purchasing in any considerable quantity.

Barbed Wire Fence.—A subscriber at Whitby, proposing to erect a barbed wire fence around his orchard, asks whether it would be more difficult to get in or out if the fence were built on a slat, say of six or eight inches at the top. If so, whether the fence should lean in or out?

We would not favor a barbed wire fence around any orchard or garden. We consider them an abomination, destroying the usefulness of more horses, and tearing more clothes, than all the fruit that would ever be stolen. No doubt such a fence leaning outward would be impossible to climb and keep out all fruit stealers.

OPEN LETTERS.

Interprovincial Trade in Live Stock.

Trade in live stock between Eastern and Western Canada has been growing rapidly within the last few years. This increase of trade has been promoted, and in fact made possible, by the wise and generous treatment of the C. P. R. During the month of December and the first eight days in January, forty-six cars of grade and pure-bred cattle were shipped from Eastern Canada to British Columbia. These cars contained 2,223 head, and cost in the East something over $30,000.00. Besides these, a considerable number have recently been sent to the North West Territories, and orders are now in hand for additional shipments to be made to the last mentioned territory. In order to promote this trade, which has proved very profitable in many districts in Eastern Canada, farmers should use first-class Shorthorn bulls. By careful selection and wise treatment females sired by such bulls will prove excellent dairy cows.

It is a noticeable fact that seven-tenths of the stock used for dairy purposes in Great Britain are Shorthorns and Shorthorn grades. Probably the most suitable dairy cow for the average farmer is a Shorthorn-Ayrshire cross. Steers whose dams are strong grade Ayrshire cows if got by a Shorthorn bull prove excellent feeders and very desirable shipping cattle. As dairy animals there are none, in the hands of the general farmer, that will excel the Shorthorn-Ayrshire cross.

F. W. Hodson.

Our Work.

The Ontario Fruit Growers' Association have still an enormous amount of work on hand, in order to assist in developing this fair province of Ontario. Their work may be the means of advertising the Dominion as a whole.

We see vast strides made in the Southern States, by which they are becoming famous. How did this come about? The great motive power is the Southern Industrial Association, which is bound together to advertise in every possible way the great resources of the Southern States. The Fruit Growars' Association can do the same with the portion of Ontario devoted to fruit. This portion is at present very small compared with what it will be in the near future. Our statesmen, our politicians, our manufacturers and mercantile men are doing their best in this respect and the Canadian Horticulturist is doing a great deal, but our Fruit Growers' Association have still a large work on hand. At the last annual meeting a flood of useful knowledge was set forth, mostly beneficial to individuals, but not so much to the industry as a whole.

The work of the Association should be continuous throughout the year. We elect officers and directors to look after our interests and, if they have the power, they undoubtedly should have also the means to further the fruit interests of which we Canadians are justly proud. One branch of work which they should look after, is the correcting of false impressions regarding our country.

England's statesmen, journalists and leaders in thought and action are the ones first to be brought to the realization of Ontario's claim as the brightest jewel in the British realm. We have been told and we know that the English are very conservative and once possessed of an idea they hold it tenaciously. For example we will quote a few false impressions from writers of high repute. Lord Macaulay's English History, considered one of the great works of literature, is to-day read and re-read in England by all the statesmen, journalists, politicians, ministers, lawyers, students and others. Now what impression do they derive about Canada in that work? Macaulay gives a beautiful description of Holland, he speaks of its fertility, its highly cultivated gardens, its quiet towns, trim villas, summer villas, summer houses flowers, renowned tulip beds, etc., and further he proceeds to say that "this view produces the same effect on an English traveller as the sight of England produces on a Norwegian or a Canadian." Here we are classed as living in the same surroundings and climate as those of Norway.

Again we read in another renowned work, Gibbon's Decline and Fall of the Roman Empire, a similar statement. Gibbon describes the climate of Germany in the early days of the Christian Era as a country of intense frost and eternal winter, the home of the reindeer, an animal which requires the most intense cold; then he proceeds as follows: "Canada is at this day an exact picture of ancient Germany; although situated in the same parallel with France, that country experiences the most vigorous cold, the ground is covered with deep and lasting snow and the waters of the St. Lawrence are regularly frozen over in a season when the Seine river in France and the Thames river in England are free from ice."

You would infer from the above two quotations that flowers and fruits in Ontario would be an oddity. These are only a few of many instances which might be quoted, but enough is shown to prove that means are needed to counteract such wrong impressions.

The shipping of fruit to England assists in dispelling this error, but still other means are needed. A great effort is being made to develop the Great North West, but before that can be satisfactorily performed it is requisite that would-be settlers should be fully informed that they have a province close at hand where they may procure an abundance of fresh fruits daily. It is only a matter of a few years when a vast improvement in fruit transportation rates will be realized (providing our Association insist on securing them.) We will not be surprised to see fruit laid down in Winnipeg as fresh and nearly as cheaply as it is now being delivered in Montreal.

We had a golden opportunity to show the Duke and Duchess of York the resources of the fruit sections of Ontario, but it was lost, and they returned to England carrying only deep impressions of the great resources of the North West, our Indian people, the lumber camps of Quebec, and of some gorgeous military spectacles. Why should not our Association seek to induce a few of England's nobility to pay a summer visit to our fruit districts, so that, on their return, the English minds may be filled with reports of Ontario's beautiful climate and luscious fruits.

J. F. Brennan, Grimsby.

OUR AFFILIATED SOCIETIES.

Grimsby.—The annual meeting was better attended than usual, and much interest taken in the election of officers, which was determined by ballot.

Mrs. E. J. Palmer was again elected President, and E. H. Read, Secretary. It was agreed to give three hardy roses to each member, and from the F. G. A. list to select the Campbell's Early grape vine for the gentlemen and the Dentzia Lemoinei for the ladies.

The directors propose to hold house meetings during the winter for the discussion of flower and fruit topics; and in the month of June to hold a rose exhibit and have a social gathering of the members on the lawn of the President, which is situated conveniently near to the village.

Simcoe.—The annual meeting of the Simcoe Horticultural Society was held in the Free Library Hall on Wednesday evening, 8th inst. There was a fair attendance of members. The President, Mr. H. H. Groff was in the chair.

Mr. Groffs success.—The Directors presented a report for the past year. We desire to quote a couple of paragraphs from it, one regarding our President, and the other relating to the late County Crown Attorney, Mr. Ansley.

"The year just closed will long be remembered in this locality because of the great Pan-American Exhibition held almost at our doors, being only a couple of hours ride from our homes. Here the brains, so to speak, of the brightest and cleverest people of this new world, were brought into competition, and it is safe to conclude that the judging was fair and honest, and that those entitled to the honors won. In this contest our fair Province secured an honorable place in horticulture—judging by our population we secured first place. And among other awards in flowers it is a matter for congratulation that the worthy President of this society, out of thirteen entries in Gladioli, secured **thirteen first prizes** and captured the gold medal, thus demonstrating that the finest bnlbs of this beautiful flower to be found in America, if not in the world, are grown by Mr. Groff, thousands of beautiful varieties being originated by him every year. And thus not only the grower but the town itself has been greatly advertised among the multitudes of people who attended this Exhibition. We feel that we cannot let this opportunity pass without assuring Mr. Groff of the exceeding great pleasure it gives us to know of his success and we desire to congratulate him on the fact that in a competition of this kind he so completely vanquished all comers."

"For the first time in our history death has entered our ranks and snatched away one of onr most esteemed members. John Henry Ansley was a gentleman who took an active part in the organization of this society. He was one who loved to work with flowers, fruit and vegetables, and he succeeded in their cultivation far beyond most others. His garden, where he spent many happy hours, was a sight to behold. He held an important place in the community, and while he had reached a vigorous old age no one thought that he would so soon be taken from us. We desire to place on record our estimate of his worth and our appreciation of the services he rendered us."

Woodstock.—The annual meeting of the Horticultural Society was held in the city council chamber last night with a good attendance of members. The reports of the treasurer showed the finances of the society to be in excellent shape, and the directors' report recorded one of the busiest and most successful years in the history of the society. The election of officers resulted in the return of those who officiated in 1901, with the exception of several changes on the board of directors.

President Pattullo was in the chair and the business of the meeting was commenced at 7.45 o'clock.

The treasurer's report for the year showed the receipts to have been $374.51; $109.50 of which was for subscriptions, $48.93 for admission fees to exhibition, premium for Horticulturist $20.60 and Legislative grant $58 The expenditure amounted to $258.23; $53.60 of which was for purchase of seed and plants, $35.75 for working expenses of flower show, $18.60 for advertising, etc., $28 for prizes awarded for best kept flower gardens, $16.78 for rent and light of buildings for meetings and exhibition, $2.50 for incidentals and $1.03 for periodicals. The balance left over all expenditures was $116.28.

Directors' Annual Report 1901. In presenting their annual report for 1901 your directors are pleased to state that the year was one of satisfactory progress. The membership of the society was larger than ever before and notwithstanding the additional expenditure incurred in giving prizes for cottage gardens and to the scholars of the city schools, there was a substantial balance on hand at the end of the year.

The active assistance of lady members of the society has been secured and has proved most valuable. One of them, Mrs. Henry Davidson, read an extremely interesting paper at one of our meetings, and two others, Mrs. H. J. Finkle and Mrs. Dawson, have also promised to read papers at some future monthly meeting.

The interest and co-operation of the teachers and scholars of the public schools have also been enlisted in the work of the society.

Two lectures from the Provincial Association addressed the scholars of the Central school, and in the evening a public meeting in the Collegiate Institute, these addresses being much appreciated by all who heard them. The thanks of the society are also due to several of our local vocalists for their kindly assistance on the above occasion. In this connection we record with pleasure that for the first time the grounds of the Collegiate Institute, the Central school and the Court House

square were this year beautified by tasteful flower beds.

The action of the society in offering prizes for cottage gardens, flower and vegetable, and for the best kept lawns and boulevards, was a happy thought and excited much interest in the city. A similar movement under the patronage of Her Excellency Lady Minto proved most successful in Ottawa, and their is little doubt the example thus set by Ottawa and Woodstock will be followed by other cities and towns throughout the country. The annual flower exhibition was successful. There were a larger number of entries than usual, and the classification and artistic display showed an improvement upon that of former years. Although the attendance of the public generally was not as large as it should have been considering the character of the exhibition, there were present many representative citizens who showed a keen interest in the work of the society, and several of them addressed the meeting and assisted in the presentation of prizes to the successful competitors in the garden and flower competitions

One of the monthly meetings of the Society took the form of an open air or "garden meeting" on the grounds of the President, and it is hoped that there may be similar meetings in future upon the invitation of other members of the society.

An influential committee was appointed during the year to report upon the further beautifying of the city parks, lawns, boulevards and streets, but owing to the lateness of the season it was not able to report. Your directors are of the opinion that this committee, by seeking co-operation with the city authorities, could enlarge its usefulness in the direction suggested.

Your secretary attended the annual meeting of the Provincial Horticultural Society and was again honored by being selected representative of this district in which capacity his usefulness to this society is enhanced.

All of which is respectively submitted,

G. R. PATTULLO, President. J. S. SCARFF, Secretary.

London.—The Directors of the London Horticultural Society beg to present their second annual report.

During the year 1901 they held eight meetings for the transaction of the business of the society. Two public meetings were also held in addition to the annual meeting on January 9th. At the first of these, on the 11th, of February, a lecture was given in the large assembly room of the Normal School by Dr. William Saunders, of Ottawa, director of the experimental farms of the Dominion. His subject was "Plants, Shrubs and Trees for the adornment of the Home," illustrated with a large series of beautiful lantern pictures. Notwithstanding the severity of the weather there was a large attendance of members and other residents of the city who showed a gratifying interest in the subject of the evening.

The second public meeting was held in the Auditorium of the Y. M. C. A. building on the evening of May 3rd. The Rev. Dr. Bethune gave an address on "Common insects injurious to garden flowers, fruits and vegetables," illustrated with colored diagrams. Mr. Wm. Gammage was also to have spoken, but was prevented by indisposition from doing so. Vocal and instrumental music was very kindly supplied by Mrs. Gillies, Miss Brown and Miss Templeton. At the close of the proceedings the plants from the Ontario Fruit Growers' Association were distributed to the members, viz., the Anthony Waterer Spiraea and the Cumberland Black-cap Raspberry.

In addition to these meetings, the members were invited to attend the proceedings at the annual convention of the Canadian Horticultural Association, which was held in London on the 5th and 6th of August. Papers were read and addresses given by several of the leading florests of the Dominion; an address was also given by Dr. Bethune, one of our members, on the insects injurious to greenhouse plants. Through the liberality of many citizens of London, our society was enabled to entertain the delegates at a luncheon at Springbank, preceded by a ride through the principal parts of the city in a trolley car handsomely decorated for the occasion with plants and flowers by Mr. Wm. Gammage.

An invitation was also extended to our members to attend the 38th annual meeting of the Entomological society of Ontario, which was held here on the 13th and 14th of November. A considerable number availed themselves of the opportunity of hearing the interesting address at the public meeting at the Normal School.

Two highly successful flower shows were held during the summer. The first, in the City Hall, took place on the 26th and 27th of June, and was very well attended. The display of flowers was remarkably fine and showed a decided advance upon the June show of the preceding year. The second exhibition was held in Cronyn Hall on the 6th and 7th of August, being the same time as the Convention of the Canadian Horticultural Association. Though the actual number of figures exhibited may not have been as large as at the August show in 1900, there was a unanimous agreement that in excellence of quality, beauty and variety it was the best show that we have yet held. The professional florists attending the Convention stated that in their opinion it was one of the best exhibits of flowers from almost every point of view that it had been their pleasure to inspect. It would, indeed, have been difficult anywhere to have surpassed in excellence the petunias and gladioli that were exhibited, to say nothing of other kinds. We were fortunate in obtaining he use of Cronyn Hall, which proved admirably adapted to the purpose, enabling the flowers to be satisfactorily arranged and affording all that could be desired as regards light and ventilation. While it would hardly be fair to select a few names for special mention from among the nearly forty contributors of flowers, it is only just to refer to the trouble taken by Mr. Gammage in filling up the platform at the end or the hall with a beautiful and tastefully arranged collection of potted plants and flowers, which added very much to the appearance of the general display. A word may also be said regarding the tableful of fine flowers sent from the Woodland Cemetery. It is much to be regretted that about one hundred of our members sent no contribution of flowers. We earnestly

hope that during the coming season each member will try to cultivate at least one variety and produce a flower that will be worthy of exhibition at our shows this year.

In order to encourage our members to keep up their interest in flowers towards the close of the season, your directors offered three prizes at the Western Fair in September for the best collections of cut flowers exhibited by members of our society; only one member, however, competed for them. Thirty-six tulip bulbs were presented to each member for autumn planting, in addition to sixteen varieties of flower seeds and a choice of shrubs in the spring.

The directors have pleasure in stating that the finances of the society are in a satisfactory condition as shown by the audited statement of the treasurer, notwithstanding the fact tnat the flower shows and meetings have all been open to the public free of charge.

All of which is respectfully submitted,

R. W. RENNIE, Secretary. J. A. BALKWILL President.

London.—The following is an extract from an article in a recent issue of the London Advertiser, regarding the excellent work done in the city by the London Horticultural Society:—

"Residents of London, who have traveled to some extent, have arrived at the unamimous conclusion that despite its visible defects, London is a very beautiful city. In its well-kept residence streets few things unpleasant to the eye present themselves. This effect is produced to a great extent by its thousands of beautiful shade trees in the streets and parks. Nothing could be more worthy of active assistance than the efforts of the body of public-spirited citizens comprising the London Horticultural Society to create in the public mind an interest in the care and judicious interest of ornamental trees, plants and flowers in the gardens, streets and parks of the city. The society was formed two years ago and already it has become a great power for good in London. Its members, while indulging their own individual taste for flower culture, have cone much to foster in the public mind a love for the beautiful and a reverence for flowers which must eventually prevent their wanton destruction. It is a significant fact that the beautiful flowers in Victoria Park are never molested; and every summer there blooms a bed of geraniums in front of the public library that is the pride of the officials of that institution. The flowers are unprotected, and are within easy reach of the passer-by, yet no one has ever attempted to disturb them."

Waterloo.—The annual meeting of the Waterloo Horticultural Society was held in the old Council Chamber on Wednesday evening, January 8th, at 7 p.m., for the purpose of receiving the annual reports of the work during the past year, and of electing the officers for 1902.

Directors' Annual Report. Your directors, in presenting their seventh annual report, congratulate the society on its continued prosperity.

Our membership during the past year was 157, and we distributed as premiums 128 Cumberland Raspberry Plants, 93 Spirea Japonica Bumalda, 76 Pear Trees, 110 German Prunes, 34 Hydrangeas paniculata grandiflora, 141 House Plants and 1,570 Hyacinth Bulbs.

We held no flower show during the past year, owing partly to the big expense incurred in connection with the one held in 1900, but we hope to be able to hold one during the summer of 1902, if the season proves at all favorable. Should this intention of ours become realized, we hope that every member of the society, as well as every lover of flowers in our prosperous town, will assist the directors, so as to make the exhibition of flowers and plants the most successful one in the history of the society.

The report of the Secretary-Treasurer and Auditors is before you, and we trust that our successors now to be elected, and the citizens generally, will continue to support and assist the good work of the Waterloo Horticultural Society.

The financial report was as follows:—

RECEIPTS.

Balance on hand from 1901	$ 27
Legislative Grant	124 00
Membership subscription	157 00
Sale of Stock	42 80
Total	$324 07

EXPENDITURE.

Horticultural Periodicals	$125 00
Purchase of Seeds and Plants	166 23
Working Expenses	10 00
Printing, Postage, Freight, etc.	21 10
Total	$322 93
Balance on hand	1 14

A. WEIDENHAMMER, President.

Kincardine.—The annual meeting of the Kincardine Horticultural Society was held on the 8th inst. pursuant to statute.

Secretary Joseph Barker, Esq., read the following excellent report:

"The Secretary of the Kincardine Horticultural Society in presenting this, the fifth annual report, begs to assure the members that he does so with very much pleasure, for the following and other reasons:

Because of the satisfactory increase in the society's membership for 1901.

Because of the very general satisfaction given to our members in the matter of tree and plant distribution during the year just closed.

Because in soliciting for membership we find tqe task is not near so difficult as formerly, owing to the fact that the utility of the Horticultural Societies and the benefits derived therefrom are better understood by the people.

Because unlike the Agricultural Societies, the Horticultural does not expend its funds in the distribution of prize money to the leading exhibitors and for expenses incurred in bringing from outside judges to pass upon the merit of high-grade stock, which has been obtained at a large outlay of money, But our Society agrees upon a judicious selection of premiums and invites its members to make their own choice—this course leaves no

room for jealousy to creep in nor for discord to crop up.

Because our Society is generously supplying a felt want it has thereby secured a large share of public favor and working on its present plan cannot fail to succeed.

Because for the small sum of $1 membership fee, the return made is so great that the most of our members are puzzled to know how it is done.

Because our Society, in addition to the return of 4,242 trees and plants to its 110 members during the past year has been instrumental in securing for them from the Fruit Growers' Association of Ontario 126 plants and the annual report of the said Association meetings, at which are discussions, the best up-to-date methods of fruit culture —how to combat the fruit pests in our orchards and gardens and how to be honest in the packing of apples.

Because in addition to the foregoing, our Society will continue its distribution of fruit trees, shrubs, plants and bulbs during the present year, and will secure for each member the monthly issue of the Canadian Horticulturist—a magazine of so much merit as to have secured at the great Pan-American Exhibition recently held at Buffalo, the first premium on horticultural literature; and further, for the benefit of the members of our society, one or more free public meetings will be convened at an early date when lectures will be given us by gentlemen eminently qnalified to instruct in the culture of fruit, flowers, etc.

JOSEPH BARKER, Secretary.

The Companionships of Christianity.

The young man who abandons the church voluntarily cuts himself off from the most exalted thoughts that can enter the human heart. He puts himself out of the company of Raphael, and Rubins, and Thorwaldsen when he might live in the atmosphere that made them great. If Michael Angelo, and Sir Christopher Wren, and Inigo Jones welcome him at the door, Mendelssohn, and Beethoven, and Bach greet him as he enters. The organ may be spavined and wind-galled. The choir may be an aggregation of tuneless tyros, but if the young man has brought any worshipful music in his soul into the church the same uplifting sentiments that inspired the "Messiah" and "Elijah" will sweep the chords of his heart as the organist touches the keys, or as the choir clears its collective throat and sings "Old Hundred."—The Rev. Francis E. Clark, D. D., in the Ladies' Home Journal.

Trees Trees

We have a full line of Fruit and Ornamental Trees for Spring, 1902, at lowest rates.

Special attention given to dealers' orders

Farmers wishing to buy **first-class stock,** absolutely **first hand, and without paying agents' commissions,** should write at once for catalogue and price list.

Don't wait until the last minute, as you will be disappointed. Place orders early and secure the varieties you want. Correspondence solicited.

WINONA NURSERY CO.

J. W. SMITH, Manager.

Fig. 2255. Cranberry Pippin.

THE
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* * MARCH * *

THE CRANBERRY PIPPIN.

THE CRANBERRY PIPPIN when grown to perfection is an excellent market apple. Larger and higher colored than Ben Davis, an equally good shipper, and of slightly better quality, it is worthy of planting in place of that variety, in localities to which it is adapted.

Its finest appearance is about Christmas time, when its beautiful stripes and splashes of carmine show up brilliantly upon the yellow background, while the flesh is still firm and crisp.

It succeeds well in the southern portions of the province, especially along the shores of lakes Ontario and Erie, but so far has not been planted by very many apple growers. The writer has about twenty-five trees of this variety in full bearing, which sometimes give an average of four barrels per tree of very fine high grade apples, when other varieties are almost worthless.

In the autumn of 1895 the writer shipped to Edinburgh a carload of this variety; the boxes having his full address upon the outside. They were sold by Messrs. Wood Omerod & Co. at top prices, and later on we received the following letter from Geo. Pegler & Co., Aberdeen, Fruiterers to Her Majesty and H. R. H. The Prince of Wales :

"We do not have the pleasure of personally knowing you but we have had the pleasure of handling some of your produce in the form of "Cranberry Pippins." The fruit (grade No. 1) has turned out in perfect condition and we have had the greatest pleasure in sending it out.

"We have, for long, hoped someone would adopt your method of packing and we are glad to see it now done. Hitherto the slaughter of fine fruit, tumbled into barrels, has been disappointing all round, and rendered dealing a most unpleasant and often unprofitable matter.

"We hope the extra care and trouble involved in your pack has proved remunerative and feel assured it has only to be persevered in to bring about the best results."

A few years ago we put up one hundred bushel boxes of this same apple for the Australian market, securing from the C. P. R. a special through rate from Toronto to Sidney of $1.00 per box.

They were magnificent samples, and, arriving in Sidney about Christmas, just in midsummer and before the early Australian apples were ready, they were sold as high as $3.75 a bushel box ! Unfortunately there was no cold storage on the Pacific steamers, so that only a part of the cargo arrived in good condition, and no further shipments will be made until we have steamers fitted for carrying them safely across the torrid zone.

The tree unfortunately only produces a good crop each alternate season, and sometimes, when soil conditions are unfavorable the apples are subject to warts and knots which mar its beauty.

The Cranberry Pippin was an accidental seedling on a farm near the Hudson river, in New York state, and seems to succeed best under conditions similar to those of its native place.

The fruit may be described as medium to large, roundish, oblate; skin smooth, yellow shaded and striped with two shades of red; stem slender, one one-eighth inches long, in deep cavity ; calyx closed in a wide, wrinkled basin. Flesh white, firm, crisp, moderately juicy, sub acid. Quality, fair. Season November to February.

We have inquired of several readers of this journal as to the success of this apple in various parts, but find it very little known. The following are some of the replies :—

"The Cranberry Pippin is not grown as plentifully throughout these western counties as it should be considering its good bearing, keeping and shipping qualities. Being an apple of rather coarse texture it is more suited to the southern districts, where it grows to larger size than it does up this way; but the farther north I find it the crisper and better is its quality.

"I consider it a valuable apple for the southern and middle counties, but the tree will not do so well in the north. Here the tree is a fairly good bearer, but the fruit averages a little smaller than with you at Grimsby. "T. H. Race, Mitchell."

"In reply to yours of yesterday, I have no knowledge of the Cranberry Pippin being grown in this district. I have never seen the apple or heard of anyone about here having it. The Baldwin does not do here and I presume the other is, if anything, less hardy. "C. L. Stephens, Orillia."

"Yours is just to hand regarding the Cranberry Pippin apple. It is not very extensively grown in this vicinity. I know of no reason why it should not be successfully grown here. I have seen a number of samples at our fall fairs that I considered fully up to the standard both in size and color. I consider it a most desirable variety to grow. "Frank Metcalfe, Blyth."

"The Cranberry Pippin has not been a success with me; it is very unproductive and drops early ; but it is a profitable apple in many orchards in this locality, where the land had more clay than mine.

"Each alternate year it loads very heavily, and brings good prices. The trees attain good size and are healthy. On such ground it is a very profitable tree to plant.

"W. H. Dempsey, Trenton."

"The Cranberry Pippin is here to stay, being looked upon as one of our reliables, both as regards the tree and fruit. Upon all our variation of soil along the lake it thrives well and is reliable as a bearer, and I have heard the same verdict from those who grow it throughout this district. I hope to see it more generally grown.

"Alex. McD. Allan, Goderich."

"The Cranberry Pippin is not much grown here. It is a fine robust tree, moderately productive, about like King, or rather better. Fruit blows off too easily. I don't think it will be extensively planted here.

"J. G. Mitchell, Clarksburg."

NOTES AND COMMENTS.

Township and County Fairs.—At the Annual Meeting of the Canadian Association of Fair and Exhibition Managers, in Toronto, the 30th of February, 1902, there were several hundred representative men present. A deep interest was manifest in certain proposals made by Mr. F. W. Hodson, of Ottawa, a year previous, for the increased usefulness of smaller fairs.

The Agricultural Societies have not been accomplishing the work designed in their institution, as laid down by the Agricultural and Arts Act, they have concentrated their whole strength upon the giving of prizes, and have lost sight of the most important object of their existence, viz, the education of their members in the best methods of Agriculture. The same lack was observed in the Horticultural Societies, and led to the formation of the Societies affiliated with our Association, which aim at making their meetings and exhibitions purely educative, and even go so far as to discourage giving prizes altogether, claiming that the funds should be spent for the equal benefit of every member. This plan entirely shuts off the professional exhibitor, and enables the Society to make most liberal gifts to each member of new and improved fruit trees, plants, seeds, bulbs, etc., one of the important objects contemplated in the Act. They also hold monthly meetings for the discussion of fruit and flower topics, which form a means for the interchange of experience on the best methods of practice—another object of their existence contemplated in the Act. Why should not our Agricultural Societies profit by their example ?

The Farmers' Institutes are doing much of the educational work neglected by the Agricultural and Horticultural Societies, and if these organizations could work in harmony a grand future is before us. Mr. G. C. Creelman, the Superintendent, met with general approval when he advocated that the Farmers' Institutes, the Women's Institutes, the Horticultural Societies, the Fruit Stations, the Fruit Growers' Associations, all should join forces, and make the fairs not only educative but also sociable and attractive.

Fruit Growers' Institutes, Mr. Creelman stated, were being formed in each district, under the supervision of the director of the Provincial Association representing the same. A series of about fifty meetings will be held during the month of March, so arranged as to cover the Province. Now these local Associations can assist the fair managers by revising the prize list for fruit, making it to include such varieties only as are desirable for each district.

Seed Fairs have been held by some four or five Farmers' Institutes, and Prof. C. A. Zavitz, of the O. A. C., Guelph, showed how grain exhibits could be mounted and shown at fairs so as to be of the greatest interest to farmers.

These should include some twenty four plants, a card showing name of variety, number of acres grown, yield per acre, kind of soil, etc. The judging should be done by experts, who could give reasons for their decisions. Mr. Geo. Hood, of Guelph, said the Seed Fair at his town was of the greatest practical use to the farmers. It gave an opportunity for the exchange of seed grain, and farmers exhibited far more with the object of selling their seed grain than fo

prizes, and they would come many miles for this purpose. An exhibit was ten bushels of a kind, and usually this was sold at an advance of 10 or 15 cents a bushel over the ordinary price for such grain. Mr. A. Reynolds, of Scarboro Junction, said such a fair had been conducted under the auspices of the Farmers' Institute of East York for ten years, and last year 6000 bushels of seed grain had changed hands! This meant much for improved grain growing in this locality. He was going to advocate three such seed fairs in different parts of his district this year.

The McDonald Seed Grain Division at Ottawa was represented by Mr. Clarke, who said that prizes to schools were proposed, somewhat as follows:—

(1). To the rural schools exhibiting the best collection of weeds pressed and mounted; and weed seeds in ounce bottles, each specimen and bottle to be properly labeled, 1st, $50; 2nd, $30; 3rd, $20; 4th, $10.

(2). For the best collection of grain and foliage crop plants, showing stolons, branches and part of root, consisting of five complete plants of each variety * * * Open to farmers' sons and daughters, under eighteen years of age—$25; $15; $10; $5.

(3). To the rural school exhibiting the best collection of beneficial and injurious insects, mounted and properly named in groups according to the fruits or grains on which they attack—$50; $30; $20; $10.

(4) To the rural school having the best kept lawn with the most artistically arranged flower beds; said flower beds to contain such varieties of plants as may be most helpful in the study of botany. Competitors for this prize must make application before the 15th of May of each year. (The judge in this competition will be the Public School inspector, together with any other person or persons whom the Association may see fit to appoint for the purpose of visiting the competing schools during the month of September. In all competitions of rural schools, the work must be done and the collections made by the pupils themselves under the direction of the teacher.)

Failure in Spraying.—Mr. A. Rogers, of Aylmer called at our office on the 14th February. He and his son carry on a fruit farm near that town with success, cultivating small fruits, grapes, peaches, plums, &c. "How do you prevent plum rot?" he asked. "Spraying with Bordeaux mixture," was our answer. "It has been a failure with me," said he. "I sprayed six times last season, and yet the plum rot was very serious in my orchard." "How did you do it?" Well, I rode along in the wagon and sprayed from that as we drove past the trees." "Did you thin your fruit?" "No, they hung in great clusters and we did not have time to thin them out."

Plum Rot.—The secret of this gentleman's failure to prevent the plum rot is the same which explains that of many others. The spraying of a tree is only effective for that portion of the leaves or fruit which is covered. Any part of a leaf, or fruit, left uncovered with spray is subject to the attack of a fungus disease. Fruit unthinned, or trees unpruned, are not easily covered; especially is it difficult to cover each separate plum when they hang in clusters, the fruits in close contact. How can a man, dashing a little spray upon a tree as he rides along past, cover every side of every plum on such a tree? The thing is simply impossible! He must get out of his wagon and walk about the tree and carefully spray every inch of wood, leaf and fruit, and then he may hope for success.

Thinning plums or peaches, when overloaded, is absolutely necessary for successful spraying for fruit rot, for when in contact the moisture is held between them that favors the spread of this fungus.

Peaches succeed very well about Aylmer, though only a few have as yet entered upon their cultivation. Mr. Rogers has several hundred trees, including such varieties as Crosby and Langhurst, because of their supposed hardiness. "I was surprised," he

said, "to find how well the Elberta does with me. It seems hardy and productive." "Have you much leaf curl upon the trees?" "No," he said, "very little indeed when I spray the trees with Bordeaux. There is a case in which my spraying has proved a complete success."

Near Markets.—I find my best markets near home for the sale of my peaches. I find any variety will sell, and I have no express charges or commissions. My son and I are in partnership; he does the business part of selling and collecting and I attend to the pickers and the care of the orchard.

Grapes also are all sold in Aylmer, St. Thomas or London. I find a good many shipped up from Grimsby and Winona, but I can get a slight advance upon that stock because mine goes into the shop much fresher from the vineyard. I have been a subscriber to your journal for many years and am putting into practice much of the information gained from it.

Hired Men for fruit farms, who will do satisfactory work, are fewer than for the grain farm. A man who can plough about trees without breaking the bark, who can plough close to the trees so that little or no work remains for plough or spade, who knows how to handle fruit in picking and carting so as to do it the least amount of injury, is much to be desired.

The usual wages for men seems to be about $22.00 a month the year around, with house and garden, or about $25.00 a month for eight or ten months with the same privileges. Of course this is a minimum price. We believe in gradations of pay according to worth, and when a man proves himself valuable, that value should be recognized by a supplemental amount. One such man we know who gets about $350 per annum because he takes a certain amount of responsibility and shows an interest in the success of the enterprise.

Fruit Farms should pay for the labor from the beginning. No man should think of waiting for an income until his apple, pear or peach trees begin bearing, but should put something in every acre to make it pay the outlay upon it every year. A friend has purchased about one hundred acres of land at a cost of over fifteen thousand dollars; he has drained it, fertilized it, planted it, and worked it most thoroughly for about ten years, until the capital invested has run up to about $30,000! He is waiting for the pear trees to pay back a good income proportionate to the capital invested. Well, they may, if all conditions are favorable, but how much better could the yearly income from small fruits or other crops between the trees have been made to equal the yearly expenses during these ten years of waiting, so that the capital invested would still be only the original $15,000! He should ponder the old proverb:—

"Who plants pears,
Plants for his heirs!"

Foreigners who have money to invest should live in Canada a year or two at least, and study conditions. A civil engineer has thirty acres of a fruit farm; he left a good business in his own profession, where he was making $2,500 per annum, and bought without studying conditions or location. He has wasted five years' income waiting for trees to grow, and now, because they do not yet produce fruit, he wants to sell and go on surveys in South Africa! But the location was ill-chosen, and goes begging for a buyer.

A New Society has been organized at Walkerton this winter through the enterprise of our director, Mr. A. E. Sherrington. He writes that they have a membership of more than fifty persons, and that it is the intention to hold a public meeting on the 13th of March. He is seeking in every

way to arouse local enthusiasm, with a view of making our next annual meeting a great success at Walkerton.

Peach Leaf Curl is a much more serious injury to the peach tree than is generally supposed. Few of us suspected that we were losing much from peach curl except a portion of the current year's fruit crop, but Pierce, of California, has proved that we lose also in the growth and vigor of the tree, and in the development of fruit buds and fruit spurs. For example, on ten trees sprayed in 1893 there was an average of about 2,800 fruit buds per inch of old wood, and on those unsprayed about 2,600, or a difference in favor of the sprayed trees of about seven per cent. Besides this he found a great many of the fruit buds produced on the sprayed trees so poorly developed that no fruit could be expected from them. For example, at the close of the season of 1893, he found the average number of imperfectly developed fruit buds on the sprayed trees to be 0.944 per lineal inch of old wood, while on the unsprayed trees the average per inch of old wood was 1.249; or 32 per cent. more imperfect fruit buds on the unsprayed than upon the sprayed trees.

Increased Value of Peaches Sprayed.—Pierce's experiments still further point to the great importance of treating the peach orchard either with Bordeaux, or with the lime and sulphur mixture, which seem to be of nearly equal value. He compares the value of spraying for increasing the quantity and quality of fruit, as determined by the cash value of such fruit when matured. To do this he reduces the results to the average net gain per cent. of the sprayed trees of each treated row over those of the adjoining unsprayed row. In one sprayed row, for example, the average calculated value of all fruit set per tree, when matured, was about $12.00 and in the adjoining unsprayed about $3.00, showing an excess of about $9.00 in favor of the sprayed row. Some other rows so treated showed a very much larger net gain.

The heightened color of the peaches sprayed with copper salts was very evident in those same experiments, which of course will be an element in the increased value of the sprayed fruit.

The saving in the cost of picking the fruit from the sprayed trees was another element to be counted. To gather a ton of peaches from the unsprayed trees cost $3.00 per ton, while from the sprayed trees it only cost about $1.00 per ton; a saving of $2.00 per ton, because of the less amount of tree and orchard surface to be gone over to gather a certain amount of fruit.

South African Peaches in England.—The South African war has temporarily checked a formidable rival of Canadian fruit growers in the British markets, especially in the line of tender fruits such as peaches and plums. Fortunately, however, these fruits are marketed at an entirely different season from those grown in Canada, and reach Covent Garden in January and February, when we have no peaches to ship; so that the rivalry will always be of a friendly nature.

So long ago as 1896 Cape Colony began to wake up to her great capabilities for the production of peaches for export to Great Britain and in 1897 the second consignment by the "Roslin Castle" was sold in Covent Garden on the 9th and 10th of January. There were 709 cases of peaches, and these were readily sold at from seven to twelve shillings per box of twenty fruits, the higher prices being for freestone peaches and the lower for clings.

Jamaica is exporting bananas to Great Britain but the voyage is long and so far the fruit has not arrived in good condition, partly owing, in the opinion of Messrs.

Garcia Jacobs & Co., of London, to the imperfect nature of the cold storage in the vessels which carried the fruit. So hopeful, however, is the prospect of success in this trade with Jamaica, that Sir Alfred Jones has announced his intention of inaugurating a "Banana Line" of steamers between Liverpool and Jamaica.

New Cherries.—VanDeman speaks, in Green's Fruit Grower, of three new cherries, viz.: The Bing, the Lambert and the Centennial, as follows :—

The Bing Cherry is a new variety that originated with a Chinaman in Oregon by that name. It is large, black when fully ripe, sweet and very solid in flesh. It is an early and abundant bearer and well worthy general trial wherever the sweet cherries flourish. The Lambert is a still newer kind and less is known of its characteristics, except to say that it is perhaps the largest variety known. It is dark, purplish red, of sweet but not high flavor and a fairly good bearer. The season of both these varieties is about medium. Very few of the eastern nurseries have trees of either of them for sale but the Bing is offered for sale by some of them. The Oregon nurseries can doubtless supply trees of the Lambert. The Oregon fruitgrowers have found both kinds good for market purposes.

The Centennial cherry is a little larger than the Napoleon and of the same color, being light pinkish red when fully ripe, but is often sent to market when yellowish with a pink cheek. They are about alike in flavor.

This Fruit Export business which was so encouraging to the Cape fruit growers, was suddenly interrupted at the outbreak of the war, when all lines of steamers were needed for the carrying of soldiers and war supplies, but now the Union Castle Line has again begun to bring fruit from the Cape, and the season for peaches will continue during the months of January, February, March and April. For plums the season will be about the same, and the varieties so far grown at the Cape for the export trade is the Burbank. This may be a hint to us in Canada, for these Japans are not in very great favor in our markets, and if they are in demand across the sea we shall be pleased to unload them on the other side.

Golden Russet apples are just now, January 25th, bringing the highest price in Covent Garden market, next to the Newton Pippin. The latter sells from 25 to 35 shillings a barrel, and the former at from 28 to 30 shillings.

Does not this point to the importance of this variety which grows to such perfection in the southern parts of our province, and indeed succeeds well as far north as Orillia, in the County of Simcoe.

Fertilizers.—At the the Wentworth Institute, held at Bartonville, on the 19th of February, Mr. Duncan Anderson, of Orilla, claimed that no commercial fertilizer could equal barn manure, because the soil must have humus or decayed vegetable matter for the regulation of temperature and of moisture. One ton of barn manure contains 9 lbs. nitrogen, 5 of phosphoric acid and 10 of potash, all of which can be purchased in a commercial fertilizer for $1.80, but the former was the most valuable because of the 500 lbs of vegetable matter which it contained.

Mr. Anderson emphasized the same points dwelt upon by Prof. Jordan before the New York State fruit growers—such as soil moisture, and tillage to preserve it. "A plant," said he, "has life just like an animal ; stunt it at the beginning, and it never fully recovers." The following three points for farmers which he gave are also valuable to fruit growers :—**1. It is impossible to make a seed bed too fine. 2. The fertility should be kept near the surface. 3. Never bring up the cool, hungry sub-soil to the surface.**

Mr Cameron Gage, of Bartonville, gave

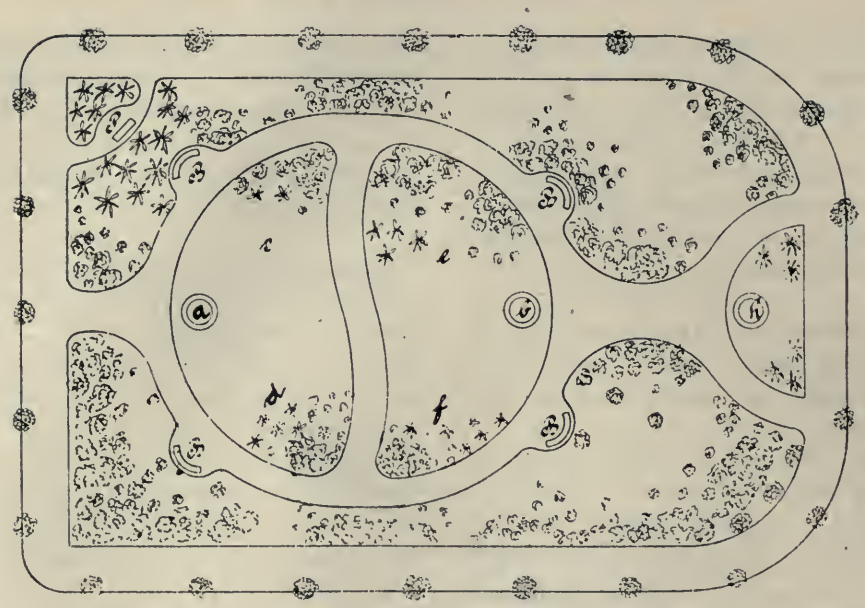


FIG. 2256. SMALL PARK.

an address on Market Gardening, dealing more especially with celery growing, which he claimed could be made a financial success, if certain conditions were observed such as location near a city or convenient shipping point ; suitable soil, such as black muck in a drained cedar swamp and abundance of manure. Mr. George Awrey acted as chairman and Mr. Erland Lee, of Stony Creek, as secretary.

A Small Park.—So many of our Horticultural Societies are desirous of doing some works along the various lines of civic improvement, that we give herewith a design from *Moeller's Deutsche Gaertner-Zeitung* of an attractive "Pleasure Garden" in the Kaiserstrasse in Mainz. A small park of this kind could easily be laid out in any of our Canadian towns or villages ; the trees, shrubs and plants could be selected to please the taste of those most interested, and the result would be great comfort and pleasure to many who are not fortunate enough to own pleasure grounds of their own :—

To the left of the central space of open turf at *a*, is a clump of Celosia cristata, and across the green at *b*, is a mixed group of flowering plants and shrubs. At projecting points, formed by the curves of the walks, are placed single specimens of pines or other needle-bearing trees. A group of palms in a shady nook are designated by *c* and farther along are fuschias and Erythrina Crista-galli with its coral-red flowers. Group *d* is planted principally with Caladiums, Aralias, and Cannas, and at *e* is a little rock-garden adorned with Musa Ensete and twining and flowering plants. Opposite this at *f* stand tall heliotropes, and B shows the park seats. Between these plantings as well as in front of the wooded parts which border the park and give it a secluded atmosphere, are flowering shrubs, making a refreshing spot in the heart of a great city.

Protection for Men Spraying.—There is no more unpleasant work for the fruit grower than spraying with copper sulphate solutions, which are very poisonous. Nothing is better than a sailor's oilskin suit, for it is light, and is water and wind proof. A hat or cap should be worn that will protect both the eyes and the back of the neck, and long rubber gloves for the protection of the hands. If necessary also glass or mica goggles may be used for the eyes.

AN INTERESTING HOUSE MEETING.

A MEANS OF DEEPENING THE INTEREST OF THE MEMBERS IN THEIR SOCIETY.

A GOOD WAY TO SPREAD INFORMATION.

AN interesting house meeting of the Grimsby Horticultural Society was held on Thursday evening, the 6th of February, at Mr. A. H. Pettit's. In the absence of Mrs. Palmer, the President, and Mr. Burland, the Vice-President, Mr. A. H. Pettit was asked to preside. Two papers were read and discussed, one by Mr. L. Woolverton, on the Garden and Lawn, and one by Mr. J. F. Brennan, on the Cultivation of the Peach Tree.

The Peach Tree.—Twelve feet apart was advocated as a proper distance apart for planting peach trees, providing they were properly shortened back. This should be done at any time between the harvesting of the fruit, and the month of April following. There is no reason, said Mr. Brennan, why a tree should have a long useless trunk and bare poles of branches, to a height of ten or fifteen feet from the ground, before you come to the bearing wood. That is just so much waste. From the beginning, prune back your trees so that they must head low down, and throw out fruit spurs along the whole way. You need not cut them back all at once, if they are now too high, but you can renew a part at a time. The proper thing, however, is never to allow them to mature such bare poles of limbs. Trees so trained will live to a greater age than those which grow as they choose, it keeps up the production of fresh, young, growing cells, and the vigor of the tree is maintained almost indefinitely, instead of dying out in ten or fifteen years. Another advantage of my method is that you can employ women pickers. Now, in peach season, men are usually scarce, because of the rush of farm work, and, if your trees are high and the fruit so far up that you have to use a twenty or thirty feet ladder to reach them, you must employ men; but if the fruit can be reached either from the ground or from step ladders, women will do the work. And a good feature of this is that they make better fruit pickers than men; they seem to know just when a peach is ready; and they handle it with greater care than men do.

"I have never pruned my peach trees very much after they are four or five years planted," said Mr. E. J. Woolverton, "up to that time I prune carefully in order to produce a well formed tree; after that I let them have their own way, simply cutting out dead or useless wood. I believe however the system of shortening is an excellent one."

Mr. Adolphus Pettit, who grows about the finest peaches about this section said, "I would not plant my trees so close as twelve feet. I do not shorten back my trees, but even if I did, I do not think I could keep them so small as to go in a square twelve feet across. I would plant them eighteen or twenty feet apart."

Mr. J M. Metcalfe plants his trees about seventeen feet apart each way, and counts that quite close enough.

"I would like to know," said Mr. Rutherford, a gentleman from Hamilton recently engaged in fruit farming at Grimsby, "whether it is possible to renew an old tree and get an entirely new top."

"Yes," said Mr. Adolphus Pettit, "I have had a tree with its limbs broken down with

fruit in September so badly that they had all to be cut off, and as a result, the following season I had a magnificent growth of young wood, and now I have a splendid tree with all the vigor of youth."

The writer remarked that he had practised shortening back his peach trees for twenty five years, and always found increased vigor as a result. He had noticed the Essex peach growers going over their orchards in July with their pruning shears, and cutting back the young wood at that time. They claimed that they could thus accomplish a double purpose, first, the shortening back of the wood growth and so keeping it more in bush form, and, secondly, thinning out the young fruit which was then well formed and set.

Climbers.—After Mr. L. Woolverton's paper on the Garden and Lawn, the discussion turned upon the best climbing vines for the verandah. He instanced the Virginia Creeper as one of the most vigorous and satisfactory for old houses, when it was desirable to cover up as much as possible, and to afford dense foliage ; but to his taste it was too rampant for a good house, it covered everything, and although very pretty in autumn with its colored foliage, it was of late years badly infested with a sort of thrip, which was very objectionable, and rendered the foliage unsightly in summer time. He commended the Akebia Quinata as a most excellent climber. It was a little slower in growth, and its flowers were very small and inconspicuous, but after a few years it became quite vigorous, and the foliage was of a beautiful dark, glossy, green color. It was hardy in the region of the peach. For stone or brick walls no climber equalled the Japan Ivy. Hall's Honeysuckle was another climber which he preferred to the Virginia Creeper, it was not a very strong grower, but it was almost evergreen, and very pretty. Clematis Virginana was a very hardy climber, which he had found away north in Algoma growing wild, but it was rather too vigorous ; and required too much attention to keep it within bounds. C. Jackmanni and C. Coccinnea were two of the finest ornamental kinds, but the wood of those was renewed every spring from the root.

"I think," said Mrs. A. G. Pettit, "that the Cobea Scandens is the best annual climber. It was given the members of our society last year and everyone was delighted with it."

"I think," said Mrs. J. W. G. Nelles, "that the Wistaria, given by our Society two years ago, is a most satisfactory climber. A vine several years old in a neighbor's house produces great bunches of beautiful flowers every year."

A Song.—A pleasing feature of the evening was the singing of Annie Laurie by Mrs. Dr. Clark of Hamilton. This old song was rendered so beautifully that everyone was charmed with it.

We commend monthly house meetings to all our affiliated Societies as one of the most delightful ways of increasing the interest in their work, and at the same time giving the members both pleasure and profit.

Peach Curl is caused by a fungus, Exoascus deformans, a fungus which is much more serious if rains or cold weather prevail at the time the trees are leafing out.

The efficiency of sprays in checking the curl is due to the fact that the spread of this fungus is due to the spores, and not to a perennial mycelium, as was at first supposed.

THE NOVA SCOTIA FRUIT GROWERS.

Apples, according to Mr. Bigelow in his recent address before the Nova Scotia Fruit Growers' Association, are the principal fruit crop of that province and the total yield for export in 1901 has been about 300,000 barrels. Strange to say the English market has been the least satisfactory; the famous Gravenstein, sold in Liverpool netting the growers only $2.00 a barrel, while this variety has sold in the American markets as high as $4.00 and $5.00 a barrel. Another singular thing noticed by Mr. Bigelow, is that apples have been shipped to England via Montreal at less cost and have arrived in better condition than when shipped by the much nearer route via Halifax.

The Transportation Problem was taken up by Mr. P. Innes, who complained that it actually cost less to bring apples from Ontario for the local trade, than to move them within the province of Nova Scotia. Comparing the freight on flour and apples he said:

All tariffs are governed by the value and quantity of goods carried. Apples go third class at seventeen cents per 100 lbs., while flour goes fifth class at ten and one-half cents in car lots. The development of Nova Scotian trade had grown immensely. Apples might be worth $1.50 per barrel, flour $3.00 to $4.00. The difference was made in the quantities carried and the charges ought to be reversed. It was a glaring injustice that apples should be carried at an average charge of twenty-five per cent. above flour. Other associations were looking for relief in this matter and we should fall into line. He would, therefore, submit this motion again, hoping that the Association would act in the present instance to better advantage than they previously had done.

RESOLUTION.

Whereas, The Canadian Freight Rate Classification was framed at a time when the apple production of the country was comparatively limited, while prices were high; and

Whereas, Since that time production has enormously increased, while prices have been continuously falling; and

Whereas, Apple growing has become an important industry in western Nova Scotia, the production averaging 500,000 barrels annually; and

Whereas, The said freight classification and any modifications or amendments thereof have to be submitted to the sanction and be approved by the Governor-in-council; therefore

Resolved, That this classification does not meet the altered circumstances, and is unfair and oppressive to the apple growers and shippers of the province, and that we do respectfully memorialize the Governor-in-council to cause the said classification to be amended by removing apples from the third and fifth classes to the fifth and eighth classes respectively.

Apple Packing was illustrated practically by Mr. Carson of Meaford, Ont., by the aid of two assistants, using three barrels of Baldwins and a full set of appliances. He advised first to secure enough uniform fruit for facers, i. e., the end of the barrel. With nippers remove the stems to prevent marring or breaking of the skins; this induces decay. In facing put medium sized fruit in the outside row; next circle, palce a size larger and aim throughout to secure a face which will be an index of the barrel. Set the barrel on a low plat form for easy working, and in securing the hoops use short nails to avoid marring the inner surface of barrel. In filling, a basket with round ends is most easily lowered into the barrel. Instead of having a "double facer," merely back the spaces of the first layer with the red side of the second. In filling put the barrel on a plank always. Shake to secure compactness.

NO. TWO STANDARD EXPLAINED.

Asked as to the standard for No. 2, Mr. Carson read from the Ontario Exporters' Bulletin, which required an apple hand-picked from the tree, perfect in color and quality, and not smaller than 2¼ inches in diameter. In Russets, he thought the standard might be reduced to 2 inches.

In finishing arrange for two layers laid stems up. Apples, like eggs, will stand most pressure at the ends. Place a pad on on the second row and shake the barrel by racking—i. e., rocking back and forth on the bottom without raising clear of the plank. This is most peculiar work. Remove the pad and place in the face layer, nipping stems and grading as before. This row should stand just above the edge of the barrel. Only one man should be permitted to empty baskets and shake the barrel. Put on a layer of paper. Knock off the top hoop and apply the press after the head is in position. Run this down carefully. Just here Mr. Carson advised the use of good presses with steel arms and double threads. Use a hatchet for driving nails only. Never hit a head with a hammer. Put it in with the press. If properly shaken, this can be done nicely. Ship at once on packing.

The barrel was then opened and exhibited before an intensely interested audience.

We would not favor Mr. Carsons's advice about using more than one size in packing. In our experience, always, a uniform size throughout a package tends to bring a higher price than mixed sizes.

Tillage in fruit growing was emphasized by Prof. Bailey of Cornell University, who believed that ploughing in an orchard should cease after five years, and, instead, the aim should be to produce a dust mulch by surface tillage with a spade harrow and grape hoe. Cover crops he counted important to furnish humus. He recommends fall vetches for this purpose, but would not allow them to grow long in spring. He would put them down with a gang plough, turning a shallow furrow, not over four inches deep.

Land worked early in spring should not require deep ploughing oftener than once in every six or seven years. Rye had been a success as a cover crop with him. No land is too poor for it. Hence it is a good thing to begin with. He usually drills in 400 or 500 lbs. of acid-phosphate with the rye in the fall. He thought highly of crimson clover, except that in some cases it induces too rapid a wood growth. This introduced the question of pruning, but tillage and pruning must be considered together at a later time. Sod is now a thing forgotten in orchard culture.

Commercial Fertilizers were not needed in an orchard not in bearing, in ordinary land ; but instead, plenty of tillage "hot ploughshares;" with sufficient tillage, he doubted if commercial fertilizers were very often needed.

Apple Tree Management had changed according to Prof. Bailey, since the days when the production of cider apples was an important object, and when any kind of an apple was good enough. Then neither fertility of soil nor high tillage were important. Now, the production of high grade fruit is the aim of the fruit grower; therefore the conditions of success in this have been emphasized, viz., first spraying, next tillage, then cover crops, and now possibly the question of the hour is pruning. Sometimes it might be necessary to till an apple orchard right up to harvesting fruit, in which case barn yard manure had to be depended on to supply humus ; but if manure was scarce, rye could be sown as late as October 1st.

Planting Entirely For Export Prof. Bailey counted a mistake ; because often our home markets would pay higher prices. For example the King was a most desirable apple, and one that had originated in Tompkins County, New York State, and yet he could not buy in that very county a first class

barrel of that variety ; they had all been shipped away.

Cover Crops was the subject of an address by Prof. Shutt, whose address is summarized as follows,–

There was perhaps no subject more prominent before fruit growers to-day than that of cover crops. The conditions were very exceptional when a profitable orchard could be kept in sod.

It was now quite generally conceded that a system of clean culture and cover crops was the best treatment that could be given the commercial orchard.

There is no cast iron rule about this system; the practice may be intelligently modified according to soil, climate and size of trees, etc.

What is the usual plan ? The orchard is kept in clean cultivation until July, then a crop, usually one of legumes, is sowed and mowed down in the autumn, allowed to start next spring, then plowed down and clean cultivated as in the preceding year.

The Object of the Cover Crop.

1. To increase the organic matter and nitrogen in the soil.

2. By the system of clean cultivation and a dry earth mulch to conserve the moisture for the growth of the trees. The legumes alone have the power of appropriating nitrogen and storing it in the soil.

The increase of humus is also an important matter, for there is no part of the soil which has more important functions than humus. It is, first, a great absorbent of moisture. almost any crop will use up between 200 and 300 tons of water per acre. It is very important to hold this water supply there. More crops suffer from lack of water than from lack of food plant. This is especially true in both the lightest lands and heaviest clays, and in these the supply of humus is especially needed.

Humus indirectly is also a source of plant food ; it is nature's store house for nitrogen. Before the plants can use this nitrogen the supply must go through the process of nitrofication, and humus holds it ready for this process.

3. Humus also contains a certain amount of phosphoric acid and potash. Decaying humus yields these substances in a partially digested form 4 to 5 times as much as the ordinary potash in the soil, by reason of its available form. The amount of potash and phosphoric acid in a soil which is assimilable in muric acid is what measures the fertility or crop-producing power of soil.

In fact it is a general rule that the fertility of the soil is largely governed by the supply of humus.

4. Humus also encourages bacterial life, the presence of which is most essential to the conversion of the plant food in the soil into a form in which the plants can absorb it. Corn crops increase the amount of humus in the soil perhaps from 8 or 10 per cent. to 15 per cent. An experiment had been tried at Ottawa this year, where the result of a corn crop had been shown.

There was a great difference in corn crops as between buckwheat and rye on one hand and clovers and legumes on the other. The former were consumers of nitrogen, and the latter absorbed it, storing it up in the roots in the ground.

The experiments show that all the way from 60 lb. to 125 lbs. of nitrogen per acre in one crop of mammoth clover can be got in the ground—as much as could be got in 10 tons of barnyard manure. Then there was the humus additional. There were also about 45 to 50 lbs. phosphoric acid and 115 lbs. potash.

The clover gets the nitrogen from the air in the soil; the better the soil has been tilled the better the clover will grow. This nitrogen absorption is due to bacteria.

The phosphoric acid and potash are of course merely worked over, and they are left in a more available form than they were previously.

The McPike Grape, which was shown at the Pan-American by The Silas Wilson Co., was originated by H. S. McPike, of Alton, Ill. It is a seedling of Worden, of the same season, but larger in berry. The skin is tender and the pulp melting.

THE FALL FAIR AS A HORTICULTURAL EDUCATOR.

BY PROF. H. L. HUTT, O. A. C., GUELPH.

THE fall fair has not, as a rule, been looked upon as one of the branches of our educational system ; but it is, nevertheless, one of the farmer's schools where valuable information may be imparted, and lessons of the most practical kind may be learned by means of object lessons.

There has been much discussion of late about increasing the educational value of these fairs by the employment of expert judges—men who could not only award the prizes properly, but could for the benefit of those present give good reasons for their decisions. This would certainly be a move in the right direction, but before any material improvement in this way can be made along the line of horticultural education, we believe it will be necessary to begin further back, and revise or remodel a majority of the prize lists; for, unless the prize list is arranged to bring out a good display of fruit of the right kinds, the expert judge, no matter how expert he may be, will be seriously handicapped in his efforts to impart information.

My attention was first called to the great necessity for improvement along this line last summer, when I was asked to revise the horticultural section of the prize list of one of our leading county exhibitions ; and it struck me very forcibly that if so much revision was necessary in the case of one of the leading exhibitions, what must it be with many of the smaller fairs, where less attention is given to the prize list ?

Since then I have taken the trouble to examine carefully a large number of the lists from all parts of the country, and I can assure you the greater number of our fall fairs are coming far short of providing the education they might from a horticultural standpoint.

I would like, therefore, to offer a few suggestions as to how these fairs might be made of much greater value to the people of all parts of the province, by spreading reliable information relative to fruit growing.

1. Every prize list should be made to encourage the production and exhibition of every class of fruit which may be successfully grown and shown in the section. In the most favorable fruit sections, many of the lists are made to include most of the fruit grown there, and which are in season at the time of the fair, such as apples, pears, grapes, plums, peaches, quinces, etc., but the greater number of them stop short at apples, pears, and grapes, and make no mention of any other kinds of fruit, whatever. Now this is not because other kinds of fruit cannot be grown, for even in the least favorable fruit sections of the province plums of the American type are quite hardy and can be grown to perfection. In some cases where the fairs are held late in the season, it may, of course, be difficult to keep such fruit in condition till fair time, but in a good cool cellar many of the latter kinds might easily be kept for some time. I am inclined to believe it would be a wise plan to place on the lists even the earlier or more perishable fruits, such as strawberries, raspberries, gooseberries and currants, and allow these to be shown in preservative fluids in ordinary gem jars, so as to show the fruits as nearly as possible in the natural condition. Mr. C. C. Caston made an exhibit of this kind at the Barrie Fair a year ago, which attracted great attention, and which was

instrumental in introducing improved varieties into more than one farm garden.

2. In each class of fruit, a few of the leading varieties best adapted to the section, should be named on the list. In fact these lists should be so carefully prepared that they might be taken as a reliable guide by intending planters. If confidence were established in the reliability of these lists, no better means of education along these lines could be given than the annual display of varieties brought out at the fall fair. The list of varieties for which prizes should be offered would naturally vary with the different sections of the country, as a variety that would be excellent for one section might be entirely unsuitable for another. The reports of our Fruit Experiment Stations should be a guide in preparing such lists. In the majority of cases the lists at present are either false guides, or no guide at all. In one list only three classes of fruit are called for, and these are collections of apples, pears and grapes, not a single variety being mentioned. On this same list 34 breeds of chickens are named, there being 83 sections for the entry of poultry. This list is a credit to the enterprise of the poultry fanciers of that section; but if so many classes and entries are necessary for poultry, of which not one farmer in twenty has a pure bred flock, and those who have, keep, as a rule, but one breed, how much more necessary that some encouragement should be given to the exhibition of fruits, of which most farmers have not only several kinds, but a number of varieties of each kind? On other lists where varieties are mentioned, lots of old worthless kinds, which should have been discarded years ago, are still being encouraged by prizes being offered year after year; while lots of valuable varieties of more recent introduction are never mentioned. In such cases the lists are false guides and are doing positive harm.

3. Offering prizes for largest collection of varieties should be discontinued. The aim should be to encourage the planting of fewer varieties, and not large collections of varieties, many of which are worthless. It is freely admitted by those in the export apple trade that the mixed shipments of many varieties in small lots are injuring our reputation in the British markets. What that market wants is a few of our best varieties in larger quantities. The fall fair exhibit of varieties, as brought out by a good prize list, should be an education as to the requirements of the local and foreign markets. The Goderich prize list is excellent in this particular. In apples it calls for three small collections, viz.: 6 best dessert varieties; 6 best cooking varieties, and 6 best export varieties.

4. Little or nothing is gained and much dissatisfaction and hard feeling is often engendered by trying to class varieties as either autumn or winter. Nearly every fall disputes are referred to us to settle whether the Ribston, or Wealthy, or some other variety should be classed as fall or winter, whereas the classing of it as either one or the other will not in the least alter its season of maturing. In southern sections, it will mature as usual in the fall, while in northern sections it may keep most of the winter; and, as to just where the dividing line would be in each case would be difficult to determine; and when determined would make very little, if any, difference. In preparing a list of varieties they should, of course, be selected so as to cover the season of maturing from early to late, in which case there would naturally be most of the long-keeping sorts; and in judging collections, the seasons covered by the varieties shown be taken into account by the judges.

5. At the end of each list of varieties of each class of fruit there should be one entry for "any other named variety." This permits the exhibition of good varieties which may not be mentioned on the list. **Following this should**

also be another entry for the "best seedling variety." This would encourage the bringing out of local seedlings, which often prove more valuable for a particular locality than some of the older named sorts. The prize in this case should not be awarded, however, unless the seedling is deemed worthy of propagation.

6. The rules for the abbreviation of the names of varieties advocated by the American Pomological Society are worthy of adoption in Canada. This would not only greatly simplify the lists, but would be a very desirable education in the proper naming of varieties. For example, we would then have :

Blenheim, not Blenheim Orange or Blenheim Pippin.

Colvert, not Culvert or Culbert.

Fameuse, not Snow. Grimes, not Grimes' Golden.

Hubbardston, not Hubbardston's Nonsuch.

King, not King of Tompkin's County.

Ribston, not Ribstone's Pippin or Ribstown Pippin.

Anjou, not Beurre d'Anjou.

Duchess, not Duchess d'Angouleme, etc.

7. In every prize list the classes and names of varieties should be arranged alphabetically. This is in itself a small matter, but it has been almost entirely overlooked in the lists, as, with but one or two exceptions, nearly all of the many lists examined have made no attempt at alphabetical arrangement. This would take but little extra time when preparing the lists for the printer, and would aggregate an immense saving of time and annoyance and mistakes on the part of the exhibitors and judges who use the lists. One should be able to see at a glance at any list whether any particular variety is on it or not.

These, then, are a few of the improvements I would suggest, which would help to make our fall fairs of more practical value to those interested in fruit growing, and much of what has been said relative to fruit growing might be applied equally well to the other branches of horticulture, viz., vegetable gardening and floriculture; but we shall say nothing more about these at present.

In conclusion I might say that I shall be pleased at any time to assist those who have the matter in hand in preparing suitable lists and making the improvements suggested.

Tapping Maple Trees.—There are some fine points to be observed even in such a simple matter as tapping a sugar maple tree. Here are five points, just for instance, given us by the Vermont Experiment Station :

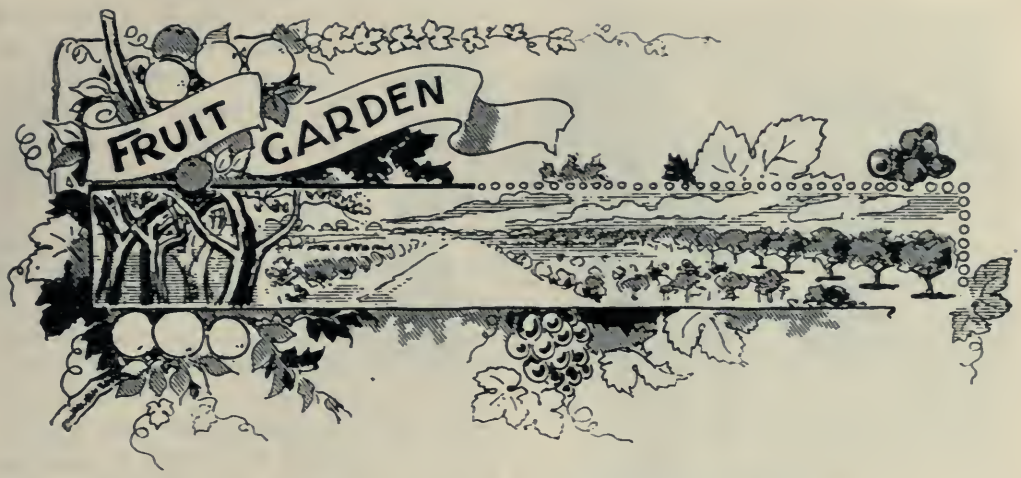
Point 1.—Only a sharp bit should be used,—one that will make a clean-cut hole.

Point 2.—The hole need not be more than three inches deep. The investigations of the Vermont Experiment Station have shown that hardly any sap comes from a greater depth.

Point 3.—The hole should be carefully cleaned of chips, because even a very small quantity of waste matter will clog the spout, obstruct the flow of sap, and seriously reduce the yield of sugar.

Point 4.—A spout should be chosen of such a pattern as will allow the freest flow of sap. It should interfere with the wood tissue of the tree as little as possible. The bark, rather than the wood, should play an important part in holding the spout firm.

Point 5.—The spout should be strong enough, and its hold on the tree firm enough, so that it will safely support the sap bucket. Moreover the spout should be easy to insert and easy to remove. The various spouts commonly sold at the hardware stores differ materially in their merits when judged by the foregoing tests. The sugar maker will do well to examine them all carefully before buying his supply for the coming season.



TIMELY NOTES ON SPRAYING.*

BY PROF. W. LOCHHEAD, O.A.C., GUELPH, ONT.

I.—Peach Leaf-Curl.

PEACH Leaf-Curl was very prevalent in the Niagara peach orchards in the spring of 1901. Very few orchards escaped, and it was not uncommon to find large areas of peach trees defoliated by midsummer. The writer had occasion to visit the Grimsby and St. Catharines districts several times during the early part of the season, and to observe the attitude of the peach-growers to the question of remedial treatment. The belief was current that spraying had little influence in combating the disease, and many growers expressed the opinion that the trouble was caused altogether by unfavorable weather conditions, and not by a fungus.

It is true that Peach Curl is most injurious when the spring opens with cold wet weather and sudden changes of temperature, but it should be borne in mind that such conditions favor the development of the fungus, the real cause of the Curl, and render the peach more susceptible to attacks by the same fungus. It has been shown experimentally that the best temperature condition for the growth of a fungus like Peach Leaf-Curl is much lower than that for the best development of the peach. Excessive moisture, while not hurtful to the fungus, is hurtful to the peach, as it saturates the tissues with water, and renders them soft. While growth may be rapid, the new cells will have thinner walls, and there will be a decided decrease in the activity of the living substance due to the excessive amount of water and the small amount of oxygen absorbed.

In the consideration of this disease, then, it must be understood that the fungus is the real cause of the trouble, and that the weather and other conditions cannot by any means produce the disease without the fungus.

There are two possible ways by which the peach leaves become infected: 1. By threads of the fungus which winter over in the year-old branchlets, and 2, by spores of the fungus in spring. The first view is the one which was generally held by botanists up to

*Notes from the Biological Department, Ontario Agricultural College.

FIG. 2257. PEACH CURL, UNTREATED LEAF.

1900, and was largely instrumental in giving rise to the belief that spraying was of no value as a remedial treatment. According to this view, the threads of the fungus in the spring extended into the leaves of the young shoots, and there formed a net-work of threads which finally caused malformation and death of the leaves. If this view be the correct one, it is manifestly of little or no value to spray, for the fungal threads are within the plant and beyond the influence of the Bordeaux.

Frequently, however, reports were received from reliable experimenters that the Bordeaux mixture did exert a controlling influence on the disease. Messrs. Craig, Orr and A. H. Pettit obtained satisfactory results in Ontario in 1897, 1898 and 1899, while Prof. Bailey, Dr. Duggar and Dr. Murrill reported excellent results in New York. Other instances might also be given, but these are sufficient to show that probably the disease was prevented from spreading to the leaves because the spores did not have an opportunity to germinate.

Newton D. Pierce, of the Department of Agriculture, Washington, D.C., began the investigation of the Peach-Curl problem as far back as 1893, and carried on an elaborate series of experiments in co-operation with peach growers in many of the states. His results were very conclusive as to the value of Bordeaux mixture as a remedial treatment, and he does not hesitate to state that the disease can be efficiently controlled by early spraying.

Mr. Pierce is of the decided opinion that the main source of infection of the leaves in spring is the spores, which find their way to the leaf buds, for over 90 per cent. of the infections can be prevented by a single spraying. Success depends upon an early application of the Bordeaux. The first spraying should be done in April **when the buds are beginning to swell, or from one to three weeks before the opening of the blossoms in the spring.** If much wet weather follows, another spraying should be made after the blossoming period.

The writer is quite aware that many orchardmen may be quite skeptical in this matter of Peach-Curl control, but facts are accumulating so rapidly that there should be but little doubt that Bordeaux mixture, applied at the **proper time,** applied in the **proper way,** after **being properly made,** will control the Peach Leaf-Curl.

The peach industry is a large one, and

FIG. 2258. PEACH CURL, TREATED LEAF.

FIG. 2259. Proper method of preparing Bordeaux mixture. The stock solutions are made up and kept in barrels 1 and 2; these are diluted in barrels 3 and 4, and finally mixed in the spray pump barrel 5.

should not be allowed to languish for the want of the application of a remedy. **The remedy is known, apply it.**

II.—Bordeaux Mixture.

Many speakers at the meetings of fruit growers report that the want of care in the preparation of the Bordeaux mixture is the main reason why better and more uniform results are not obtained in the spraying of orchards for the prevention of fungus diseases. As spraying operations will begin next month, a few notes in the imperative form regarding the preparation of the Bordeaux mixture will not be out of place here.

1. Use nothing but fresh quick-lime. The lime should be slowly slaked by the gradual addition of water.

2. Never mix the concentrated stock solutions together.

Stock solutions of milk of lime and blue-stone are usually prepared and kept in different barrels in readiness for spraying operations. In barrel No. 1, 25 lbs. of fresh lime are gradually slaked with 25 gallons of water; in barrel No. 2, 25 lbs. of copper sulphate or blue-stone are dissolved in 25 gallons of warm water. (Fig. 2259).

These are the stock solutions: Each gallon of milk of lime contains one pound of of lime, and each gallon of blue-stone solution contains one pound of blue-stone. When we wish to make up a barrel of Bordeaux solution, all that is necessary to do is to take out 4 gallons of milk of lime, and 4 gallons of blue-stone solution, and either dilute each in separate barrels in 20 gallons of water before mixing in the barrel attached to the spray-pump, or else pour each separately into the barrel in which are already 32 gallons of water. The first method, that is, where the four gallons of the stock solutions are diluted in separate barrels to 20 gallons, before mixing in the barrel attached to the spray pump, is the preferable one.

If the milk of lime and blue-stone are mixed in the concentrated form, just as they are taken from the stock solution, a precipitate of a flakey nature will soon settle out, and either fall to the bottom or clog the nozzle. It is also believed that the fungicidal value of the copper and lime compound formed is not as great as that formed when the solutions are mixed in a dilute form.

3. Test the Bordeaux to find out if sufficient milk of lime has been added. This is most readily done by means of the ferrocyanide test. A saturated solution of this substance can be purchased at any druggist's for a few cents. In testing, place some of the Bordeaux, which has been thoroughly stirred, into a saucer, and add a few drops of the

ferrocyanide. If sufficient lime has been used no discoloration will appear, but if insufficient, a dark brown color will be produced.

4. Always strain the milk of lime to prevent gritty particles from clogging the nozzles. The milk of lime can be readily strained if a large 20-mesh brass wire strainer is fitted over the mouth of the barrel in which dilution takes place.

5. Use a fine nozzle; do not soak or drench the tree. The liquid must be put on as a fine mist, and the spraying of the stems, leaves and fruit must not go beyond a complete bedewing, for, if more is put on, the fine dew spots will run together and begin to drip.

Lime is very variable in strength and the ferrocyanide test should be made every time a new "batch" is made up. Too much lime does not harm the Bordeaux to any extent, but it will clog the nozzle, and this is a very important matter in actual practice.

III.—Pure Paris Green.

A prominent fruit grower told the writer, not long ago, that some simple tests for determining the purity of Paris green would be welcomed, for he believed that some of the Paris green on the market was adulterated and unsuited for purposes of spraying. Bulletin 68, Illinois Agricultural Experimental Station gives the following as the requirements of a good Paris green :

1. It should be a wholly dry and impalpable powder. Grittiness and caking are indications of adulteration.

2. It should have a bright, light emerald green color, which should not whiten or become dull in the streak left in allowing a small sample to slide down a clean glass plate, when tilted and gently tapped.

3. It should be entirely soluble in ammonia. Any residue is an adulterant.

4. Under the microscope it should be seen to contain only a small trace of foreign matter, and should consist of *clean* green spheres, wholly separate from one another. Aggregation into masses is evidence of careless manufacture.

5. Paris green should contain not less than 50 per cent. of arsenious oxide, of which not more than 4 per cent. should be in the fresh state or uncombined with copper.

Requirements 2 and 3 may be readily tested by any person, and do not take much trouble. Every purchase should be tested, for if it is adulterated to any extent, the work it will do will be correspondingly decreased.

THE REINE HORTENSE CHERRY.

Sir,—In your cherry report, which by the way, is of great value to every intending planter, you place the Reine Hortense cherry among the first of its class.

Your estimate of that fine cherry has been fully verified in my experience. I have a tree eighteen years planted, that is doing very well indeed. Almost every year its slender branches are bending with its load of fine fruit, although frequently during those eighteen years the temperature has fallen twenty and more degrees below zero.

The fruit is very large and nearly sweet, and it is the finest flavored of the class of Duke cherries. The tree is very distinct and beautiful in its habit of growth, resembling, as it grows older, the weeping willow; its slender branches drooping almost to the ground. Those of my acquaintances, who have sampled them, agree that in flavor and size of fruit, combined with beauty of tree, it is indeed a wonderful cherry. No garden or orchard should be without it.

The Reine Hortense will add to the beauty of a home and its juicy fruit to the health and pleasure of a family. Any one setting out cherry trees in the spring should not forget to include the Reine Hortense.

Galt, Ont. Walter M. Turnbull.

FIRST LESSONS IN FRUIT GROWING—IV.

BY PROF. H. L. HUTT, O. A. C., GUELPH.

Forming the Tree Top.

IN the last lesson, we studied the structure of the tree trunk, and learned something of the way in which new growth is added each year.

In this lesson, we shall look into the top of the tree and note some of the peculiarities of the branches composing the head.

The formation of the head of most of our fruit trees is begun in the nursery by cutting back the top of the young tree at whatever height it is desired the head should start, and by lopping off also the lower branches nearly to the top. Several branches are thus started into rapid growth near the top, and it is often left for the planter when transplanting these trees into the orchard to thin out all but three or four, which become the **main branches** and form the frame-work of the tree.

From the main branches, which are situated upon the trunk, are thrown out numerous secondary branches, which subdivide again into smaller branches, until a branchy top is formed.

What Determines the Shape of the Head.

The form of the head depends largely upon the habit of growth of the branches, which varies greatly, not only with the different species of trees, but also with the varieties of any particular species. In most kinds of pears, the branches have a very erect habit of growth, which naturally causes them to form tall narrow heads. In apple trees we see a greater tendency for the branches to spread, although in a few varieties, such as the Yellow Transparent, there is a more or less upright habit of growth as in the pears. The branches of the Northern Spy have what might be called a curved erect habit, that is, they branch out somewhat horizontally, and then become more or less erect. A horizontal habit of branching may be seen in the Roxbury Russet and Greening, and such trees form spreading flat-topped heads. The two extremes in habit of growth may be seen in the Abundance and Burbank plums ; the former grows very erect, while the latter is a sprawling, horizontal grower, the branches of which often become drooping from the weight of crop.

Shoots.

Shoots are branches of one season's growth. In a young vigorous growing tree, the shoots annually formed are often several feet in length, but as the tree becomes older and its vigor diminishes, its energies are turned to the production of fruit rather than wood, and the new shoots are often not more than a few inches in length. In Fig. 2260, at (a). (a)., may be seen the short shoots of last year's growth in a Morello cherry.

The long sprawling shoots in grape-vines and berry-bushes, when matured, and known as **canes.** The term **sucker,** or watersprout, is often applied to the strong shoots which make their appearance on the older branches, particularly after the tree has been severely pruned. Such shoots are an effort on the part of Nature to restore the equilibrium between top and roots which has been disturbed by severe pruning. The term **sucker** is more correctly applied to those shoots which come up around the base of the trunk, or which spring from underground stems or injured roots. The tendency to sucker is much more common in some species than in

FIG. 2260. Branches of Morello Cherry (half size), showing last year's shoots (a, a) and fruit spurs (b) along the sides of the older wood.

others, and kinds that sucker readily may easily be propagated by root-cuttings.

Fruit Branches.

When trees begin bearing fruit, special forms of branches may be found in them, that are not noticeable in young trees not yet in bearing. These are the branches upon which the fruit is produced. Different kinds of trees have different kinds of fruiting branches with which it is important that the fruit grower should be familiar.

One of the most insignificant-looking branches, yet the most important in its productiveness, is what is known as the **fruit-spur.**

Fruit-spurs.

These are short, stunted-looking branches which differ much in appearance and habit of growth in different fruits, as may be seen by the accompanying illustrations.

In apple and pear trees, the fruit-spur makes its appearance first as a prominent bud on wood at least two years old. During the second season, it lengthens a short distance, and bears only a cluster of leaves, but the third season it usually blooms ; and, if all goes well, bears fruit. After fruiting, it branches again just below where the fruit is produced, extends half an inch or more, and bears again, and usually continues branching and bearing in alternate seasons. After several years of such growth, the branch may not be over six to eight inches in length, and yet the scars on its sides may show that it has several times produced fruit. Fig. 2261 shows an apple fruit-spur of seven seasons' growth, which has produced four apples, as seen by the large scars at (a). Three attempts at bearing have been made at (b) but the blossoms have fallen without setting fruit, as shown by the small scars ; and six strong fruit-buds at (c) give promise of fruit next year.

In vigorous young apple and pear trees just beginning to bear, most of the fruit will be found at the end of the slender fruiting branches from six to ten inches in length, usually in the centre of the tree.

Such branches were shoots that began life with the evident intention of producing nothing but wood and leaves, as has been the custom in the tree, the terminal bud of each has been tranformed into a fruit-bud, and Nature has directed their energy to the production of fruit.

When the trees are bare of foliage, the fruit-spurs may often be noticed very much enlarged and swollen. This is quite commonly seen in the Ben Davis and Oldenburg apple trees and also in some kinds of pear

trees, and is due to the storing up of an extra supply of nourishment at that point for the development of the fruit.

The plum and cherry and also the currant and gooseberry have fruit-spurs, but they are quite different for those of the apple and pear. Fig. 2260, shows a section of branch from a common Morello, or sour cherry tree. The larger part of the branch is five-year-old wood, about two feet of the newer wood having been cut off at the top. By comparing this with the apple branch, it will be noticed that it has not the zig-zag habit of growth of the apple branch. The reason for this is that the fruit-buds in the cherry, as also in the plum, currant and gooseberry are not on the end, but are grouped near the end of the spur, and have a leaf-bud in the centre to extend the growth straight ahead.

The peach tree forms no fruit-spurs, although the fruit may occasionally be found on short stunted branches, which have the appearance of fruit-spurs, but these are in reality very short shoots which never bear again.

If a peach tree is examined when in flower or fruit, it will be seen that the fruit is produced from the lower buds along the sides of the last year's shoots. In this fruit, then, the vigorous shoots of this season's growth become next year's fruiting branches.

In the case of grapes, raspberries and blackberries, the fruit is borne on shoots of the same season's growth, which start from last year's canes. In the grape, the fruit is born at two or three joints near the base of the shoot, which grows several feet in length and becomes next year's cane. In the raspberries and blackberries, however, the fruit is born at the ends of the shoots which die with the whole cane after fruiting, and are succeeded by new canes which spring from the root.

The quince bears fruit in a manner peculiar to itself. It does not produce fruit-spurs, like the apple; nor yet along the sides of last year's shoots, like the peach; but it bears the fruit singly on the ends of shoots three or four inches in length, of the same season's growth.

FIG. 2261. Apple Fruit-spur (natural size).

(a) Large scars showing where fruit has been borne.
(b) Smaller scars where blossoms have appeared but fruit has not set.
(c) Strong fruit-buds which will blossom next spring.

Here, then, we have quite a number of ways in which Nature develops and modifies the forms of branches to serve her purposes in the production of fruit. How important, then, that the man who grows fruit should study her methods, and learn how to work at all times in harmony with her laws.

FERTILITY OF ORCHARDS.

NEARLY one whole morning was given by the Western New York Horticultural Society to the study of soil conditions for fertility. Dr. Jordan, of the Geneva Experiment Station, showed that this was a complex question, and one that did not depend so much upon the amount of fertilizing elements in the soil, such as potash, nitrogen and phosphoric acid, as upon physical conditions which alone could enable the plant to take the benefit of these substances. The important physical conditions were such as texture of the soil, warmth, moisture, etc. Without these conditions, commercial fertilizers were little use. Indeed everyone had noticed that in a dry season no good was perceptible from fertilizers applied.

Water.—First, he emphasized water as the most important of such conditions. The amount of water extracted from the soil by growing crops was much more than is usually supposed ; e.g., an acre of oats, in one season, would transpire 2,000,000 lbs. of water.

He explained how water was stored in the soil, each independent particle of moist soil being completely surrounded by a film of water. Soil therefore, whose grains have the largest surface to the cubic foot would retain the largest amount of water. The smaller the soil particles are the more the surface area; thus, as King puts it, a cubic foot of marbles one inch in diameter possesses an aggregate surface of 37.7 square feet, while if the marbles were reduced in diameter to one thousandth of an inch, then the total area per cubic foot is increased to 37,700 square feet. From these differences it is evident that the amounts of water coarse and fine grained soils retain will be very different, and, in general, clay holds more water than sand.

The amount of water retained by the particles will also be influenced by the distance of standing water below the surface. This is what is known as the water level, or the level of complete saturation. This must be below the roots of the plants, to provide for soil ventilation, without which the plant cannot grow.

Tillage is most important in the conservation of moisture. An immense quantity of water is lost by evaporation, in some cases as much as 1 3/10 pounds per square foot per day. This is prevented by an earth mulch or "dust blanket," which breaks up the capillarity that carries the moisture to the surface and allows it to escape by evaporation. It has been proven that scratching the surface one, two or three inches deep will serve to prevent this escape of water, and since, as shown in our notes last month, the amount of nitric nitrogen is greater in soil cultivated three inches deep than a greater or less depth, it would appear well proven that this depth of three inches for summer cultivation is the best for all purposes.

The immense amount of water needed is evident, from the fact that each ton of dry matter produced uses up from two to four hundred tons of water. The production of four tons of Indian corn would probably need from eight to twenty tons of water.

Fruit growers must take care, said the director, not to let useless crops rob the land of the moisture needed by the fruit trees.

Would you grow apple trees in sod? asked some one. Prof. Jordan emphatically opposed such a practice. Hilgard found, from actual test, that a cultivated orchard had much more available water than one not cultivated, in which the grass had robbed the trees of their moisture. Besides, the cultivated trees had made a growth of three

feet in a single season, and those uncultivated only about three inches. Burrill had made a test and found 12 per cent. of water in cultivated soil, and only 8 per cent. in that which had run to grass.

Constant Cultivation is necessary to get the best results ; cultivation that will stir every particle of soil, to a depth of two or three inches. Granted that the soil in spring is saturated, then you should have twelve inches of rain during the season to keep up the supply. Husband this rain by tillage and give your tree the moisture needed for best results. Late fall ploughing tends to increase the supply, while early spring cultivation breaks the capillarity and saves the moisture by an earth mulch. Then every rain tends to compact the surface soil and encourage rapid evaporation ; therefore the importance of at once cultivating the soil, after every rain, to prevent a serious loss of moisture.

Even Cover Crops tend to draw moisture from the soil, and therefore should be ploughed in as early as possible in the spring.

Kellog, of Michigan, had found oats sown in July or August the best cover crop to supply humus to the land and protect the roots of the trees from winter killing, because the oat plants are dead in the spring, and therefore do not draw moisture at that season. Their excellence as a cover crop had been shown by Prof. Taft, of the Michigan Agricultural College.

Hitchings was an advocate of sod for orchards. He had adopted this system for years with success, but every summer he had mulched the trees heavily with cut grass or some such material. He had in this way encouraged his trees to root near to the surface, where they could easily drink in the least shower of rain, which could not percolate down to the deeper rooted trees. His soil was clay loam, very stoney.

Secrets of Success.—This important subject of Soil Fertility was still farther emphasized by Prof. Roberts, of Cornell University. Tillage and cover crops are, in his opinion, the two great secrets of success in orcharding. In clay soil there were too many large and too few small particles, and, for such soil, lime was beneficial because it tended to flocculate the small particles, and thus make it more open. Heavy rains tend to seal up a heavy clay surface, but surface tillage unseals the lumps. If, after a heavy rain, we cultivate and form a loose earth mulch of dry soil, the moisture from below will only rise to the bottom of it. This constant cultivation, besides protecting the soil from loss of water, is a most efficient agent in setting free plant food.

Commercial Fertilizers Not Always Needed.—In fact there is in the soil, locked up, an abundance of plant food, and, if we only possessed the means of unlocking it and getting it out, we could sell fertilizers to the fertilizer dealers at their own price and make enough money to endow a college. The key to this, to a large extent, consists in constant tillage. Cover crops are useful by furnishing humus, and by helping to secure nitrification.

The physical condition of the soil, Prof. Roberts declared, was more important to tree growth than the addition of commercial fertilizers, for unless the soil is in proper condition, fertilizers will be wasted.

The St. Louis World's Fair was spoken of by Mr. A. W. Taylor at the Rochester meeting, who drew especial attention to the grand provision for horticulture in the magnificent combined building for Agriculture, Horticulture and Dairying, which was to cover an area of thirty-three acres—the largest building in the world of its kind.

The Anjou Pear was shown at Rochester by Messrs. Ellwanger and Barry and, as usual, the samples were magnificent. Several commercial packages of this pear were also shown ; they were put up in a box 10 x 10 x 18 inches, each containing forty-two pears. The smallest of these pears measured 2½ inches in diameter, and the

most of them three inches. The average price for these packages in New York, in the month of January, is $2.00, or nearly five cents a pear.

Among the other pears we noticed P. Barry a winter pear, ripening in May; a variety which succeeds splendidly in California, but averages rather small in the east; and Duhamel de Monceau, which presented a very attractive appearance and is considered a valuable commercial variety. Among the apples shown by the New York Experiment Station were York Imperial, which was of good color, but which averaged barely 2½ inches in diameter and disappointed us considerably after all the reports given us of its value as a commercial apple. Certainly it is away behind the Canadian Spy, in size and in beauty. The samples of Holland Pippin were fine, measuring about 3½ inches in diameter and showing a fine waxen yellow color.

Campbell's Early Grape was shown in the form of a dried bunch, which must have been remarkably fine, for the note attached by Geo. S. Josselyn, the grower, stated that the bunch originally weighed seventeen ounces.

The Fruit Fly, which infests sour cherries, was mentioned in Prof. Slingerland's report as one of the most formidable of insect pests. No certain remedy has yet been found for it, and it threatens to wholly ruin the business of growing sour cherries. The fruit looks fair, but the housewife finds every cherry infested with a maggot, which fortunately does not affect the sweet cherries.

STRAWBERRIES FOR EXHIBITION.

BY M. A. DIER, OTTAWA.

VERY few realize the large amount of pleasure and satisfaction there is in growing one kind of fruit, and in producing the very finest that can be grown. And not many are willing to adopt modern methods of cultivation, which mean more labor and more thought than old methods.

There are many things to consider in connection with the production of fine, extra large, highly flavoured strawberries, beautifully colored and glossy; but I shall treat the subject as briefly as I can.

The **ideal method** is, I believe, the annual system. By this I mean the transplanting of runners in August or September—runners grown carefully, being assisted in obtaining a foothold in the soil, instead of blowing about in the wind, and fruiting them the following season, and then immediately plowing or spading the same soil (if necessary) for re-planting a month or so later. Early every spring I plant out as many plants of each variety as I wish for propagating purposes only. Every attention is paid to these plants, the soil kept perfectly clean, the first runners only being pinched off. After this the runners are assisted to take root by pegging them down, and a little soil drawn over the parts where roots are emitted. Two plants are grown on each runner, and only four or five runners on each plant. They are kept apart so there is no crowding.

If the weather is dry, thorough irrigation is necessary.

The soil for this nursery bed should be in the finest possible condition, as success depends on well nurtured plants.

I do not think I need say much in reference to soil preparation, as the readers of the Horticulturist know all about this. I

might say, however, that I do not consider it necessary to work the soil to a great depth as has been, and is frequently, recommended. Five or six inches of well prepared top soil is enough. A liberal dressing of manure, the fall before planting, is advisable in most cases, being plowed in and the ground left in a rough condition during the winter, and this supplemented by bone meal and wood ashes, or sulphate of potash in the spring—sulphate is better than muriate of potash.

The soil cannot be made too fine nnd ought to he perfectly free of lumps, and before planting should be rolled or tramped quite firm.

The plot of ground for fruiting should be enriched and prepared as above and sown with radishes, early peas, etc., which can be got out of the way by the middle of August. A thorough digging and firming should follow after the vegetables have been removed, and it is ready for the plants.

Transplanting ought not to be done during a drouth if it can be avoided. Better wait a month for rainy weather, unless, of course, irrigation is possible. The plants are removed from nursery to fruiting plot with great care, leaving as much soil as possible adhering to roots. This is a slow and tedious process where one's time is limited, and for this reason the fruiting plot should be close to the nursery so that little time will be lost in moving plants from one place to the other.

Too much care cannot possibly be exercised in transplanting. When this is done the surface of the soil, an inch or so, should be kept loose to prevent evaporation until the mulch is applied later on.

Weeds and runners should be watched for and kept down. About the middle of September or earlier, a mulch of manure may be applied, covering the soil between the plants. I use partially decayed leaves for that purpose, and find them excellent. These when dug in after fruiting, keep the soil in perfect condition. The object of this mulch is to protect the soil from early frosts, it makes further cultivation unnecessary and the top inch of soil becomes filled with fine roots without which a plant cannot do its best.

Protecting the ground from early frosts, permits the growth to continue much later than it otherwise would. After the ground is frozen solid, the whole bed is covered with a heavy mulch of clean straw or other suitable material, the larger part of which is removed early in the spring. I have found that a heavy mulch between the rows during fruiting is anything but beneficial. Thinning of blossoms may be a good thing and I have always practiced it until the past season, when my fruit was fully equal in size and quality to other seasons.

In making my fruiting plot, I plant in beds, with a path two feet between. In the beds the plants are one foot apart each way; three rows in a bed. One can work among the plants nicely when so planted without tramping on or injuring the plants in the least.

The varieties which have succeeded best with me for exhibition are : Marshall, Edgar Queen, Brunette, Sharpless, Woolverton, Greenville, Bubach, Wm. Belt, Nick Ohmer and Margaret.

By giving close attention to all the requirements of my plants, I have produced Haverlands, Warfields and Lovetts of such large size as to be almost unrecognizable, and I do not think the limit has yet been reached.

I make selections every year, taking a few plants from those which have produced the finest specimens, and propagate from these. In this way, I believe, I am improving my stock.

In growing strawberries, as in everything else, results are directly proportional to the amount of energy expended, and one always feels well repaid for extra work done in the strawberry patch.

HONEST FRUIT PACKING.

WE have so often emphasized the importance of a revolution of methods in fruit packing that it seems almost superfluous to revert to it again; especially now that it is regulated by an Act of Parliament. Nevertheless we believe that our readers will be interested in an address by Chas. E. Forster, of New York City, before the Connecticut Fruit Growers on Domestic and Foreign Fruit Markets, from which we make the following extract:—

"Who that has stood in any of the markets of the world to which our special lines of perishables find their way has not blushed at the sight of offerings unworthy of the name? It was but last spring that a prominent commission firm at Liverpool wrote of a certain consignment of Russets from New York:—'It is a shame that any American of character should send such trash to the English markets with the expectation of satisfactory sale. The whole invoice after removal of the top layers is little better than culls.' A society of horticulturists as prominent as this, and which is bestowing so much time and thought upon the subjects of conservation of the soil, elimination of insect pests, and the general physical upbuilding and expansion of orchard and garden cultivation, can well afford to supplement its good work by allying itself strongly upon the side of honorable methods of marketing the developed product. The exalted standard adopted by your distinguished colleague, Mr. J. H. Hale, of South Glastonbury, should be an inspiration to all serious-minded horticulturists. His scientific skill in the growing of fruits is only exceeded by a studied choice of the most marketable varieties, while his methods and style of grading and packing has given him a name beyond reproach in all markets he has entered. We have another in our own State of New York, in the person of Mr. Geo. T. Powell of Briarcliff Manor, who, in addition to the study of how to produce, is ever foremost in the discussion of how best to market this great fruit crop of ours.

"Honesty of method is the prevailing instinct which dominates the work of high-minded, practical men in all departments of industrial life. The United States may well be proud of the great galaxy of talent devoted to the elevation of fruit growing from the haphazard standard of former days to that of the scientific culture which gradually but surely is making its influence felt in every rural community. The average grower of fruits and vegetables needs just as much education upon the secondary proposition, how best to market his product, as upon the primary one of how best to grow it. The distributor, or dealer, to whom he may consign withholds suggestions for fear of being misunderstood. To criticise a shipper's methods too often means the loss of a more or less valuable client. It does not pay and is therefore considered not worth while.

"What the markets require is, quality first, and quantity next. Let the peaches be well graded with but one variety in a package. Give generous measure. A crate of raspberries scantily filled never brings its real value. Avoid the pony package, and let the latter be new whenever and wherever possible. The apple barrel adopted by the National Apple Shippers' Association is the standard of the country, and will sell in any market at home or abroad. The stove-pipe barrel of the Hudson River can go to Europe or to New York, where they don't want it, but the great West will have none of it. When using the generous second-hand flour barrel always wash and dry it thoroughly. Flour dust upon apples, pears and quinces means a cut of twenty-five or fifty cents in the price to make the stock sell. It represents a poor economy of time and labor. Use a stencil for the different varieties. It costs but a trifle, and indicates care and interest in the details that is always appreciated. Don't be ashamed to have a brand of your own, and pack up to it. The No. 2 stock will sell under a second brand, which can be understood. Shake apple barrels often while packing the fruit, and the attendant pressing need not then be too severe to bring it to market light and in good form."

SEASONABLE NOTES FOR MARCH.

BY WM. HUNT, HAMILTON.

THE GREENHOUSE.

TOWARD the end of the month or at least early in April it will be necessary to give partial shading to palms and ferns as well as to newly potted cuttings or young seedling plants. If the shading is delayed too late in the season many of the plants (especially the young growth of palms) will suffer from sun scald. There is even greater danger in this respect at this early season than later on when ventilation can be given more freely than now during the treacherous weather often experienced in March. Bright hot sun, accompanied with keen, biting, frosty winds, makes it difficult to give ventilation sufficient to keep down the temperature without exposing the plants to danger. A light shading will prevent the hot sun from doing any great damage on bright cold days, when perhaps it is difficult to open the ventilators. Plants in flower will scarcely need shade for a week or two yet.

Water must be used more freely than hitherto, not only to the roots of plants, but on the floors as well as overhead syringing. Sprinkling the floors liberally with water, early in the afternoon, will benefit the plants very much.

Freesias.—Pots of these useful greenhouse plants should still be given an ample supply of water, after they have done flowering, if good strong flowering pips or bulbs are required for use next season. Freesias commence to form young bulbs just about the time the plants are in full flower, so that it is necessary to give them water several weeks after they are out of flower. The drying off or resting period must not be commenced until the young bulbs have attained to almost mature growth, which is usually three or four weeks from the time the old bulbs are out of flower. After this period water can be withheld gradually until they are dried off completely, when no more water must be given them until time to re-pot them in August or September.

Roses.—These, whether in pots or planted out, will require regular daily syringing on bright days. A little fertilizer will be found beneficial now that a more active growth has commenced.

Cyclamen.—Continue to water cyclamen rather liberally, even when they have done

FIG. 2262. CHINESE PRIMULA.

flowering. In fact at no time should the soil become quite dry, even during the summer resting period. Pick off all the seed pods unless seed from them is required, as the production of seed reduces the strength and vitality of the corms or bulbs considerably.

Fuchsias.—These should be coming into flower nicely now. A little shade, plenty of water at the roots and a gentle syringing every day will help fuchsias greatly. A little fertilizer once a week will also help them along.

Azaleas.—Syringe azaleas every day when they are out of flower. Water at the roots must be given in sufficient quantities to thoroughly moisten all the roots.

Primulas.—Less water should be given these plants when out of flower. The double variety (Primula alba plena), as shown in the engraving should be propagated as soon as they are out of flower. Cuttings of this useful variety strike readily in sand in a shady position. This double variety of the Chinese Primula is one of the best and most satisfactory for an amateur grower. Like all other primulas it delights in a well drained soil, with a good admixture of leaf soil added to rich loamy potting soil, as well as a little sand mixed in.

Annuals.—Seeds of these for early flowering can be sown now. Better results will, however, probably be obtained by sowing them a month later.

Bedding Stock.—Cuttings of coleus, ageratum, lobelia and all bedding out plants should be taken now. Heliotrope and abutilons strike readily now from tender growth. One of the most valuable additions to the list of bedding plants recently is the pretty dwarf growing Abutilon Savitzi. Its bright silvery marked leaves and its compact habit of growth promises to bring this new variety into great popularity as a bedding plant.

FLOWER GARDEN.

March is a trying month for half-hardy plant life out of doors. A light covering of some protective material such as straw, long manure, etc., will be found beneficial to many plants laid bare by their winter blanket of snow having been melted away from them. A little protection now for a few weeks will be more needed than earlier, even though the frost may not be quite as severe.

FIG. 2263. ABUTILON SAVITZI.

FIG. 2264. COMET ASTER.

Bulbs.—These should not be uncovered until danger of severe frost is over. Remove the covering by degrees, as sudden exposure to light and air (and perhaps late frosts) will likely injure the flowering heads.

THE WINDOW.

Late in March, or early in April, is a good time to re-pot all the hardiest kind of window plants, such as geraniums, cyperus, ferns, and plants required for summer decoration.

Tuberous Begonias.—Old tubers of these plants can be started into growth now. Shake out the old soil carefully from the tuber if it has been kept in the pot during the winter. Good, rich, loamy potting soil with a small quantity of soil mixed with it suits these pretty summer flowering plants splendidly. Soil that a geranium will grow well in will suit tuberous begonias. Use plenty of drainage in the pots, water the soil once thoroughly after potting. Water should then be given sparingly until the plants have well started into growth.

Summer Flowering and Foliage Begonias, including Rex varieties, can be potted. The same remarks regarding drainage and watering will apply as for tuberous begonias, but the soil, especially for the Rex varieties, should have about one-fourth part of leaf soil added to that recommended for the tuberous variety. Amongst the newer varieties of begonia suitable for the window are B. Thurston, B. Haageana and B. nivea, whilst older varieties such as B. Sandersonii, B. fuchsiaoides and of course Begonia rubra cannot be omitted.

Annuals.—Seeds of those can now be sown so as to secure early flowers. Although the antirrhinum is not classed strictly as an annual, it can be grown as easily and successfully as any of the annuals. The newly introduced dwarf flowering varieties make a splendid display as border plants and will give a supply of flowers during the burning days of July and August, when flowers are often scarce. These dwarf growing varieties also succeed splendidly in pots in winter. The beds of these plants at the recent Pan-American exhibition were very much admired and proved conclusively the suitability of the new types of these old favorites for bedding plants. They are easy to raise and a few plants should be found in every flower garden.

The Scabiosa is another annual that will give good results during the hot months of summer and on until late in autumn. A pot or two of these sown early in April and planted out the second or third week in May will, with very little care and attention, provide a bountiful supply of flowers for decorative purposes. A bunch of the multicolored types of scabiosa with a few spikes of antirrhinums and mignonette sticking up above the somewhat flat flowers of the scabiosa, relieved here and there with a few sprays of fern or foliage will make a most acceptable vase of flowers for table or house decorative purposes. The scabiosa, like the

snap-dragons, are not very exacting as to the nature of the soil, flourishing in either a loamy or a stiffer soil with almost equal vigor and profuseness of flower. A rich soil, however, brings much larger flowers and richer and more intense tints and shades of color. A dozen or two plants each of the snap-dragon and scabiosa planted out in the garden will not only beautify the flower garden but furnish an almost unlimited supply of cut flowers the entire summer. Both of these varieties are largely grown by commercial florists, a fact that proves their usefulness for cut flower purposes.

FICUS REPENS.

FIG. 2265. FICUS REPENS.

This plant is perhaps one of the prettiest evergreen greenhouse climbers that we have. One would scarcely think, judging from its miniature-like foliage and its decided climbing habit of growth, that it belonged to the same class of plants as the well-known rubber plant (Ficus elastica) that has such coarse, heavy foliage, and is altogether of a different habit of growth from this little climbing Ficus. Unlike a good many so-called climbers, Ficus repens requires no tying or training to induce it to cling to any support against which it is planted. In this respect it is very similar to the out-door climber, Ampelopsis Veitchii, or Boston Ivy; in fact, it has sometimes been termed the indoor Boston Ivy. It is very easy to propagate, striking root readily in sand in a moderate temperature. For covering a wall or even a board partition in a greenhouse or conservatory it comes in splendidly, as it is of very small culture, in fact, if given only fairly rich soil and an ordinary greenhouse temperature it will soon cover two or three square yards of surface with its ivy-like growth and small glossy green foliage. Its immunity from insect attacks as well as its ease of culture is another point in its favor, as few, if any, of the insect pests that are so partial to greenhouse climbers ever give any trouble with this miniature Ficus. A fairly rich compost of loamy soil, plenty of root room and a temperature of 50° to 75° suits this useful little climber splendidly. The plant as shown in the photo had been planted only about a year and a half from a cutting when the photo was taken.

Hamilton. W. HUNT.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

QUESTION DRAWER.

Spineless Gooseberry.

1273. SIR,—Can you tell me anything about the Spineless Gooseberry? Has it been a success or failure in Canada? I am sure a great many of your readers would like this information.

Anagance, N. B. LESTOR STOCKTON.

We know of no one in Canada who has tested this berry as yet. We will have it tested at one of our fruit stations.

The Laburnum.

1274. SIR.—Would the Laburnum stand over the Quebec winter?

Montreal, Que. J. A. HARTE.

No. This tree is tender even in the Niagara district and would not succeed north of the peach belt.

Lime, Sulphur and Salt.

1275. SIR,—Is not the preparation of this spray a very troublesome operation?

SUBSCRIBER.

The following directions may be a good answer to this inquiry, given in the Delaware East Shore Farmer:

FORMULA.

Unslacked lime . .	40 pounds.
Sulphur	20 "
Salt	15 "
Water to make 60 gallons.	

Place ten pounds of lime and twenty of sulphur in a boiler with twenty gallons of water, and boil over a brisk fire for not less than one hour and a half, or until the sulphur is thoroughly dissolved. When this takes place the mixture will be of an amber color. Next place in a cask thirty pounds of unslacked lime, pouring over it enough hot water to thoroughly slack it; and while it is boiling add the fifteen pounds of salt. When this is dissolved, add to the lime and

sulphur in the boiler and cook for half an hour longer, when the necessary hot water to make the sixty gallons should be added.

Mr. Geo. E. Fisher, our provincial inspector, gives a slightly different formula, see page 61, and doubts if the salt is really essential. He writes :—"With good cooking appliances the preparation of lime, sulphur and salt wash is not nearly so serious an undertaking as it may appear. Where only fungus is involved I would prefer to use Bordeaux, but the California wash is a good insecticide as well as fungicide and costs only from one-quarter to one-third the cost of soap, the water for which must be heated also. I have not guaranteed any result from this wash (L. S. & S.) but am asking the growers to join us in making further experiments next spring and they are likely to do so in a wholesale way. The sulphur is supplied in bags of 112 lbs. and ninety-one bags have been applied for. One bag will make seven to eight 30 gallon lots of wash. If it goes on like this I am afraid the people I bought from will not be able to supply the quantity required."

Cultivation of the Gooseberry.

1276. SIR,—Please give your method of cultivation of Gooseberries.

ANSWER BY MR. STANLEY SPILLET, NANTYR.

As I pointed out in my last letter the gooseberry has two layers of roots, one layer close to the surface. I visited quite a large plantation last year in which the scuffler had been run close to the bushes, with the result that this upper layer was badly torn. If that had been done a little earlier in the season every berry would have fallen off. Black currants will act in the same way. I lost two crops of gooseberries and black currants by deep cultivation before I detected the cause, and I have never failed to have a crop since. The method that I prefer, one year with another, is to mulch under and about the bushes with fine well-rotted manure, and run the scuffler (a Planet, Jr.) one width between the rows. When the conservation of moisture is the sole object in mulching, finely broken pea straw beats everything else I have ever used for that purpose. I prefer the manure because it feeds the bush through the upper layer of roots.

If pea straw is used, it is better for the purpose if it has lain a year out in the field in a pile. It should be applied early in the spring so that the rains shall flatten it down. The nicest piece of mulching I have ever seen was pea straw well broken by a threshing machine ; it was applied in the fall, and all the surface was covered with the straw.

The snow in winter packed it down and the whole piece was as level and smooth as a carpeted floor. I never saw finer Downings than grew that year. Mice made paths in all directions under the straw, but not a stem was touched.

Morris and McCullough, our principal strawberry growers here, use pea straw altogether for covering the vines after the ground has frozen. It is spread thinly and raked off in spring between the rows, and they find nothing else equal to it.

For cultivation under and about bushes of all kinds, including Shaffer and Columbian raspberries, my favorite tool is a long-handled shovel, ground sharp both at the point and along the sides of the blade. Early in spring a large shovelful of hardwood ashes is sprinkled under each bush and then the mulch is applied over the ashes. Our supply of manure is obtained from hotel stables. We have just got in thirty two-horse loads, and it is infested with all kinds of seeds. The strong weeds will grow through the mulch but can be easily cut by running a shovel under the mulch, and this can be done without disturbing the mulch very much. Every second year manure is dug in between rows. Strawy manure is preferred, as it serves to loosen up the clay soil. The ground is dug deep and thrown well back, and the trench thus formed is filled with manure, well tramped

in. By covering this manure another trench is formed and filled, and so on. I have no doubt that the manure can be ploughed in. I have always had the largest crop of raspberries from Shaffer and Columbia when they are mulched. The roots of these two varieties are so near the surface that the soil can scarcely be stirred without injuring them and letting in the drouth, or rather letting out the water.

I have never covered my strawberries and always have a good crop of berries.

Ferns and Insects.

1277. SIR,—I am sending you leaves of two ferns that are infested with some small insect; can you tell me the best treatment to use? The larger of the two I have had for many years; it has grown a large handsome plant and I have had no trouble till now. It did not look well and on examining it with a magnifying glass I found tiny insects all round each leaf on the under side. For some weeks I have been dipping it in strong soap suds, once or twice a week, and about a week ago repotted it, but so far it does not look much better. Would you recommend me to cut off all the leaves and let it spring up again from the root?

The asparagus fern has had a few scaly insects which I have picked off, but something smaller seems to attack the very ends of the fronds and spoil its beauty. I have given it also the soap suds bath. What would you advise for it?

Will you kindly tell me the name of the larger one, and if you can, the cause of the trouble?

Port Dover. (MISS) E. P. BATTERSBY.

ANSWERED BY PROF. H. L. HUTT, O. A. C.

GUELPH.

The name of the Fern enclosed is Pteris longifolia. This is a vigorous growing fern which does well in ordinary dwelling houses. The other, frequently called Asparagus Fern, is not a fern at all, but is a plumose variety of the common vegetable Asparagus. Its proper name is Asparagus plumosus. The leaves were somewhat dry when they arrived here, so I could find no trace of insects upon the fern; but I judge the trouble was caused by the Red Spider, a very common pest upon house plants, especially where the air is dry and temperature runs high.

Your plan of dipping the plants in strong soapsuds is probably the best that could be adopted to keep plants free of this pest; but if the fronds are already much injured by it, it would probably be just as well to cut them off close to the ground and allow fresh ones to come up. Care should then be taken that the new ones are kept free from the spider.

The few scale insects found on the Asparagus would hardly account for the dying of the tips. The scales should, of course, be picked off whenever noticed; but the dead tips may be due to the age of the shoots. It would be better to cut off all unsightly shoots and allow fresh ones to come up to take their place.

Club Root in Cabbage.

In your January number, Mr. E. Millihen, Port Colborne, Ont., asks to "Kindly give cause of club root in cabbage and what will prevent or stop it." Prof. Hutt mentions that no reliable data has been obtained, but that lime has been effective in destroying the spores of club root in the soil.

We have market gardeners in the vicinity of Montreal who have grown cauliflowers and cabbage for over ten years in succession on the same land, but always with a liberal application of lime. For over twenty years we have used ashes as well as lime with equal success. A few years ago we had not enough ashes to finish a row, leaving about ten rows without, and we lost nearly all the cauliflowers in these ten rows with club root. Next season we planted the same land with cabbages, with ashes in abundance, and did not find a plant affected with club root.

A very good way to find if the land is affected with club root is as follows: In pulling out the plants of wild mustard, if you find them with club root, then don't spare the lime for the cabbage or cauliflower. You will find Dr. Fletcher, Entomologist of the Experimental Farm, Ottawa, will substantiate what I say. R. BRODIE.

"Westmount," Montreal.

OPEN LETTERS.

The Niagara Fruit Exhibit Before the Duke and Duchess.

SIR,—In looking over the February number of the Horticulturist I find a timely communication from J. P. Brennan, Esq., Grimsby. I am more than surprised at his closing remarks, namely, "We had a golden opportunity to show the Duke and Duchess of York the resources of the fruit sections of Ontario, but it was lost," &c. Doubtless Mr. Brennan at the time of the Niagara Fruit Exhibit was very busy with the final disposal of his fruit crop, and like some other fruit growers failed to notice in the Toronto daily papers, also the St. Catharines, Niagara Falls and Niagara Times papers reports of this Niagara Fruit Growers' Exhibit for the Royal party at the Queen's Royal Hotel, Oct. 12, 13, 14, 1901. I now enclose a clipping from the Toronto Mail referring to the subject:—

"No, the fruit growers were not behind. The exhibit was in every respect a decided success and is thought to be the best advertisement ever given our export trade in fruit.

"The collection of peaches, grapes, pears, strawberries and figs was exceptionally fine in regard to flavor, size and color, and was said to be the best ever seen at that late season, Oct. 12th to 14th.

"The exhibit in the above named fruits was larger than at any time seen on the tables during our Ontario Fruit Exhibit at the Pan-American, except after the 10th of September, when the tables of that exhibit literally groaned under the pressure."

I seldom take the trouble to correct an error in print, but in justice to the committee, the contributors and Mr. Winnett of the Queen's Royal Hotel, Niagara, who together paid every cent of the cost of this exhibit, this explanation is now needed.

The chairman of this exhibit received a letter from the Governor-General Lord Minto, expressing the thanks and high appreciation of the Royal party to the fruit growers for their excellent display of fruit at Niagara. I am, yours sincerely,

W. ARMSTRONG.

Riverside Fruit Farm, Queenston, Feb. 19, 1902.

Orchard Tools and Implements.

SIR,—I think a very interesting article might be written on orchard tools and implements. I have a good sized young orchard which I have been cultivating with a disc harrow, but that is a pretty heavy instrument for a team, and my idea is that an orchard would be easier and better cultivated if part of the cultivating were done with a spring tooth cultivator and not a harrow, because I think the harrow does not stay well enough in the ground and is liable to be knocked against the trees with stones, but the spring tooth cultivators that are made now have very high wheels. The trouble with those is that if the trees are branched out 4 or 4½ feet from the ground, they run out a little before growing upwards, and with the high wheel cultivator one has to keep out perhaps three feet from the trees, or the high wheel will scrape the l mbs.

FRANCIS S. WALLBRIDGE, Belleville.

Fruit and Health.

SIR,—Has the Association ever paid any attention to the scale on the orange imported into this country, or has the Association ever paid attention to the fruit and vegetables imported into this country in a diseased condition? What effect has this decayed fruit on the health of the people? Some five years since I noticed on the Ottawa market, imported cabbage in a decaying state. I claimed at the time, that if such importation was continued it would bring sickness to the consumer. The importation has been continued and I claim as a result it is largely responsible for the present state of health in the Dominion of Canada.

Those imports ought to be inspected at the port of entry by a health officer and all fruit that is in bad condition returned to the shipper at the shipper's expense and not to be appraised by the custom-house officer.

In regard to fruit packing, when fraud is found why not make the penalty the returning of the package to the shipper and charging him all expenses.

Billings Bridge, Ont. MARKET GARDENER.

Bug Death—A New Insecticide.

SIR,—Having recently received numerous enquiries regarding the composition of "Bug Death" a new insecticide, for destroying the potato beetle, we submitted the material to analysis and obtained the following data:—

Moisture	.40	per cent.
Insoluble matter, sand, etc.	11.21	"
Oxide of iron and alumina	5.60	"
Lime	.51	"
Potash	none	
Zinc oxide	82.10	per cent.
Lead and copper	faint traces.	
Phosphoric acid	traces.	
Chlorine	.47	per cent.
Nitrogen	.107	"

These results show that it is practically an impure or commercial zinc oxide, no doubt a by-product. As regards the essential elements of plant food, it is strikingly deficient, the only constituent present of any fertilizing value being nitrogen, of which there is only one-tenth of one per cent. It is therefore, obvious that any claims made for it as supplying nourishment for crops are without foundation. Yours truly,

FRANK T. SHUTT,

Dominion Experimental Farm, Ottawa. Chemist.

Our Apples at Glasgow.

SIR,—On page 506, December number, 1901, of the Canadian Horticulturist, is inserted a letter from the Glasgow (Scotland) Herald of October 6th, that needs correction.

In it the writer says. "while strolling round the Canadian section of the Glasgow Exhibition in July, I came upon the most magnificent display of apples I ever witnessed. Entering into conversation with the gentlemen in charge he kindly explained to me the different varieties, and also allowed me to taste several, which I found to be excellent.

The varieties which he particularly recommended as first rate eating apples, were Alexander, Gloria Mundi, Holland Pippin, Ben Davis, Wealthy, Fameuse, Mann, Spitzenberg and Blenheim Pippin.

I think it will be almost needless to say, that, with regard to that paragraph of his letter, the writer must either have misunderstood what was said or writing from memory, some time afterwards has unintentionally fallen into error.

The largest and showiest apples at the date of his visit have evidently been fixed on his memory, and are placed at the head of his list. The two last, viz. the Spitzenburg and the Blenheim Pippin, were remarkably fine in quaiity, and much admired and commented on during the whole term of the exhibition.

Another passage in the letter requires explanation, viz., that where it says he was surprised to find that out of fifty varieties exhibited, only three were as yet known in Britain. This also is probably due to a misapprhension

As very few of your army of readers are personally acquainted with me, I have thought it advisable to draw attention to these misleading passages lest any one should fancy that some inexperienced fellow was in charge of the fruit exhibit at the Glasgow Exhibition.

Grenville, Que. ROBT. HAMILTON.

News from our Fruit Stations.

Algoma Station. SIR,—At the fall show at Sault Ste. Marie the display of fruit was immense. Collections ran from twenty-five to fifty varieties, all good sound fruit ; but the variety that caught the eye on the tables for the immense size and showy appearance. was Alexander.

I have not seen anything to come nearly equal to them in eastern Ontario. There were eight exhibits of this apple, besides those shown in collections. Ben Davis was exhibited for the first time, but judging from the species shown, will be no use here. A number of Russian varieties obtained from Central Experimental Farm, Ottawa, were also shown ; they were, I should judge, all fall apples and none of them equal to what we already have.

An arrangement might be made to hold our annual picnic here, something along the same line as last season at the Fruit Stations. Our usual attendance at this meeting was from three to five hundred and it is to be held at Richard Landing this year. The usual time is the beginning of August.

The thermometer is twenty-eight below zero here to-day, with bright sunshine ; there is about one foot of snow on the ground.

Richards Landing. CHAS. YOUNG.

OUR AFFILIATED SOCIETIES.

Orillia.—The annual meeting of the Orillia Horticultural Society was held in the Council Chambers on Wednesday evening, the 8th of January. The President, Mr. G. I. Bolster, in the chair. The attendance was satisfactory. The Secretary-Treasurer presented the annual statement of accounts, which showed receipts from all sources of $239.63, including balance on hand from 1900 of $69.88. The total expenditure was $240.45 leaving a balance due the Treasurer of 85 cents. The President read the following report of the proceedings of the year: "With much regret I have to announce to you that since our last annual meeting we have been deprived by the hand of death of our friend and Vice-President, Mr. W. H. Leef. In him we have lost a zealous and valuable member of the Society. I have the pleasure of making the following report of the proceedings of the society during the past year. At the first meeting of your Directors, it was determined that monthly meetings should be held during the year, and the first of these monthly meetings was held on the 12th of February. This proved an interesting meeting and many matters were freely discussed. It was determined to invite Prof. Fletcher to deliver a lecture some time during the spring; this however, he found impossible to do, but promised to try to meet our views at a subsequent period. A committee was appointed to communicate with the Town Council and the Board of Trade with a view to joint action in the matter of planting and care of street shade trees, boulevards, etc. Both of these bodies appointed committees to meet your committee, and a joint meeting was held, of which Mr. C. L. Stephens was made chairman, and Mr. G. H. Clark, secretary. The matters referred to were fully considered and several recommendations made for the action of the Council; and subsequently the joint committees met the Council and everything recommended seemed to receive favorable consideration and a promise of being carried into effect; but notwithstanding, no steps were taken during the year to carry out the matters agreed upon. A slight improvement in the method of planting street trees was, however, noticable and with good results so far.

A vote of thanks and congratulations to Mr. Stephens was moved by Mr. Secord, seconded by

Mr. Alport, for the interest he had taken in, and success which had attended his efforts to secure a creditable exhibit of fruits from this district to the Pan-American Exposition, last summer. Both the mover and seconder expressed in felicitous terms the pride with which they had viewed the Canadian exhibit at Buffalo, more particularly the Ontario part, in which Orillia district occupied so prominent and creditable a place.

On motion of Messrs. Reeve and Fisher, it was resolved that meetings of the Board be held on the second Tuesday in February, March and April, 7.30 p. m. in the Council Chambers.

On motion of Messrs. Secord and Reeve, the Secretary was instructed to suggest to the Minister of Agriculture, that should any amendment be made in the Agriculture and Arts Act, at an early day, it be provided the annual meetings of Horticulture Societies may be held on any day during the second week in January which may be appointed by the Directors, on due notice being given in the usual way.

At a subsequent meeting of the Directors. Mr. C. L. Stephens was appointed Secretary-Treasurer for 1902. The Secretary was instructed to communicate with Prof. Fletcher, with a view to having him deliver a lecture in Orillia at some early date. The committee of last year to act in conjunction with Town Council and Board of Trade in the matter of street shade trees, boulevards, etc, was re-appointed.

OUR BOOK TABLE.

BOOKS.

Atlas of Western Canada, issued under the direction of Hon. Clifford Sifton, Minister of the Interior, Ottawa Canada, 1902. This is a most creditable work, and is designed to give the world some adequate idea of the resources and extent of our magnificent country.

Mr. F. Marion Crawford's novel, *Marietta: A Maid of Venice*, is now in its fortieth thousand and a new edition is on the press; and a fourth edition of Mrs. Alice Morse Earle's *Old-Time Gardens* is also on the press.

"The Cow Pea" is the title of the latest publication issued by the Experiment Farm of the North Carolina State Horticultural Society at Southern Pines, N. C. This book, neatly bound and illustrated, in plain and concise manner, discusses the value and uses of that important crop—The Cow Pea. Every reader can get a copy free by writing to the Superintendent of Experiment Farm, Southern Pines, N. C.

JOURNALS.

Country Life in America, January, 1902, Page, Doubleday & Co. 34 Union Sq. East New York City. This is only the third issue of this elegant publication, which is edited by that indefatigable writer, Prof. L. H. Bailey, of Cornell University. It is a folio of thirty two pages, printed on extra heavy, highly finished paper, and illustrated with magnificent photogravures, some of them full page size. We know of no journal in the world equal to it, dealing with country life, either in make up or in subject matter; and it will command a place on the table of the gentleman as well as on the desk of the practical horticulturist.

Farm, Field and Fireside Monthly, published by the Howard Co. Chicago, Ill. got up in similar style with the well known American Agriculturist, on ordinary paper, but containing very much valuable, practical information.

CATALOGUES.

The Jewel Nursery Co., Lake City, Minn., fruit trees. Vilmorin Andrieux & Co., 4 Quai de la Megisserie, Paris, France, Seed Merchants. The Robert Evans Seed Co., Hamilton, Ont., Catalogue, Farm and Garden Seeds, 1902. John A. Bruce & Co., Seed Merchants, Hamilton, Canada. George S. Joceleyn, Fredonia, N. Y., Wholesale Catalogue of American Grape Vines, 1902.

Cannas, New and Hybrid Gladioli, Groff's Hybrids, John A. Campbell, Simcoe, Ont. How to Spray, when to Spray and what Sprayer to use, The Gould Mfg. Co., Seneca Falls, N. Y. Theodore B. Shepherd's Descriptive Catalogue. Seed Annual, 1902, D. M. Ferry, Seedsman, Windsor, Ont.

Silas Wilson, Atlanta, Iowa, Circular of the McPike Grape. Price List of Nurseries 1902. Albert Wood, Woodlawn Nurseries, Rochester, N. Y., Descriptive Catalogue, Spring 1902—Small Fruits.

BULLETINS,

Results Obtained in 1901 from Trial Plots of grain, fodder corn, field roots and potatoes, by Wm. Saunders, L. L. D, Director Experimental Farm, Ottawa. Bulletin 39.

Apples and Plums are treated of in the Fourteenth Annual Report of the Vermont Experimental Station, 1900-1901, by Prof. F. A. Waugh, Horticulturist, Burlington, Vt.

FIG. 2266. MOORE'S DIAMOND.

THE
CANADIAN HORTICULTURIST
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* * APRIL * *

DIAMOND.

(MOORE'S DIAMOND.)

A FEW years ago the Niagara grape was introduced with such a flourish of trumpets that several other excellent white grapes of merit, introduced about the same time, were quite obscured for a season. Among these was the Diamond, a grape now coming to its deserved level by reason of its merit. We have purposely shortened the name from Moore's Diamond, by which term it has been generally known, in accordance with our general rule of abbreviating as much as possible the names of varieties. We have for example Moore's Early and Moore's Diamond; is it not better to call the former Moore and the latter Diamond?

Our frontispiece shows a bunch of this grape grown in our experimental plot at Maplehurst in 1901, which is but an average sample. Perhaps the bunches were unusually fine that season, but if it continues to yield such fine and attractive bunches, and to ripen a week in advance of Concord and Niagara, it will command the market for white grapes for that week.

That Diamond is growing in value and is also a suitable variety for the colder sections, is evidenced by its being double starred for Quebec, Ontario, Maine, Massachusetts, New York and Michigan as a desirable variety for planting.

Its origin was at Brighton, N. Y. in 1873, by Mr. Jacob Moore, from seed of Concord, fertilized with Iona; just one year after the Niagara was originated at Lockport.

The vine is vigorous and productive, with foliage much like that of one of its parents, the Concord. The bunch is large, this one measuring 5½ x 3½ inches, compact and shouldered. At the Michigan station, where weights are taken instead of measurements, Diamond is put down as 4 ounces and the Concord a trifle over 5 ounces, a good way of showing comparative size.

The berry is about three quarters of an inch in diameter, and adheres firmly to the stem. It is greenish white in color, yellowing slightly at maturity, pulp tender. Quality, good for desert, superior to the Concord. The Michigan station gives it 8 for quality,

the Concord 6 and the Delaware (the highest) 10. In season it is about a week in advance of the Concord.

In order to have the opinion of others, as well as our own, both for and against this grape we add the following :–

"Vine vigorous and quite productive. Valuable for home use, and grown to quite an extent for market in some grape sections." Mich. Bull. 187.

"The best out door white grape we have" Judge Miller, Ohio.

"The most attractive and earliest white grape cultivated South," P. J. Berckmans, Augusta, Florida.

"Unproductive in my vineyard," G. W. Campbell, Ohio.

"Earlier than Niagara, and on that account brings a higher price, but it does not produce half the quantity," M. Pettit, Winona, Ont.

"It has a large white grape not quite as large as the Niagara, heavily shouldered or sometimes double shouldered. The flavor is juicy, sweet and of good quality. It ripens one week ahead of the Niagara. The wood is strong and vigorous and has a good tough foliage. I consider the Niagara and Moore's Diamond the only two profitable white grapes to grow for commercial purposes. The only drawback is that it does not throw out enough tendril to hold it to the wires." F. G. Stewart, Homer, Ont.

"I have fruited the Diamond for the past five years. I find its season about with Worden. It is a heavy cropper, the bunch is fine and shouldered ; the vine vigorous and the foliage healthy. I consider it very valuable." Geo. X. Walker, St. Catharines.

"I think there are two strains of this grape, one almost worthless and the other one is the very best of grapes." W. H. Bunting, St Catharines, Ont.

"I have fruited the Diamond here and it does remarkably well. The vines are very healthy and vigorous. It bears very well and ripens a little earlier than other white grapes. I consider it a very good variety." G. C. Caston, Craighurst, Ont.

NOTES ON CURRANTS.

BY A. W. PEART, FREEMAN, ONT.

CURRANTS do not like a light sandy soil nor a heavy clay ; a rich, porous, damp but not wet one, seems to suit them. Until last year the margin of profit in growing them was narrow, so much so that many plantations were pulled up. The re-action appears, however, to have set in, and we may look for higher prices during the next few years.

In the red varieties the Wilder, a new one, the Cherry, Red Victoria and the North Star take the lead here ; in white, the White Grape and White Imperial ; and in black the Collin's Prolific, Saunders and Naples stand first in the order mentioned. Both the North Star and Collin's Prolific are late varieties. Black Currants are desirable, inasmuch as they are practically immune from all troubles, while the red and white varieties are easy victims to the currant worm unless promptly destroyed with Paris green, of which one pound to 250 gallons of water will suffice. This fruit is a voracious feeder, but quickly responds to careful cultivation and liberal manuring.

NOTES AND COMMENTS.

Science and Practice will be more closely related during the 20th Century in consequence of the labors of such men as Lawes and Gilbert, whose names have become familiar to all careful students. Their work has made the 19th Century famous for exceedingly useful agricultural experiments, and has set in operation experiment station work in many countries. Hitherto the great mass of the people, and especially the farmers and fruit growers, have known little of the underlying principles of their practice, because such knowledge has been locked up in books and largely confined to the halls of the great Universities for the benefit of students of the liberal Arts. Education had been monopolized by the professions; and the lords of the soil, kept in ignorance, lacked that self respect that was due to their noble occupation, and did not attain that success which was due to their industry.

Now all is changed. The professor goes to meet the farmers, and submits himself to their cross questioning: he puts his chemistry, physiology and botany into common terms and applies the principles to the every day duties of the farm. As a result we shall have intelligent cultivation of the soil, and failure and discouragement will be the exception in our fair Dominion.

Night Shelter would appear to have an influence on vegetable production, if we may judge from results attained by A. Petit, of France, in 1901. Various mats and screens were stretched a certain distance above the plants at night, and a record kept as compared with certain other plants not so treated. In case of cabbage and lettuce sheltered from March to May a very considerable increase in yield was noted; while strawberries with night shelter from October 15th, grew more vigorously, were about eight days earlier, and the crop was sensibly heavier than where not sheltered.

To make plants bloom in the window garden Mr. Barton advises using small pots. Most people, he told the farmers at Grange Hall, Grantham, used pots too large and in consequence the plants produced stalks and leaves instead of flowers. Another mistake, often made, was in getting the black soil from the woods for flowering plants. This is not the best potting soil. Better get a strong clay loam, such as you would sow to wheat; take a turf from that and let it rot in a pile for one year. Then, if necessary, it could be enriched with cow manure, and made porous with sharp sand.

Trees for home and school grounds, according to Mr. W. C. McCalla at the same meeting, may be well selected from the native varieties. He had collected a herbarium of these trees, and found at least twenty species which grew in the Niagara district, that could not be found elsewhere. Mr. L. Woolverton advocated the cultivation of taste in tree planting about the farmer's house. Trees and shrubs should be grouped about the entrance to give an air of mystery to the approach, and in front of fences, barns and other objectionable features, so as to hide them from view. He advocated an open lawn in front of the house as the very best setting for it.

Boys and girls who live in the country should study those things that will best fit them for their life work. "The professions," said Mr. Duncan Anderson, "are overcrowded, but there is plenty of room on the

FIG. 2267. VALLEY OF THE SAUGEEN RIVER.

farm for our best talent. One thousand dollars in a city is soon used up in house rent, vegetable and fruit bills, and many other things which the farmer has without buying and which he often forgets to count Besides, in a public position a man is only engaged while young and strong, but as soon as he reaches the declining days of life and loses his position, he cannot easily secure another."

Civic Improvement.—Owing to the enterprise of our esteemed experimenter at Walkerton, Mr. A. E. Sherrington, a fine Horticultural Society has been organized at this town.

The first public meeting was held in the Opera House on March 13th, when the Mayor occupied the chair and the Walkerton orchestra provided delightful music. The speakers of the evening were Mr. T. H. Race, of Mitchell, and Mr. L. Woolverton, of Grimsby. The former gave a most delightful and inspiring address upon the influence of flowers upon the life and character, and the latter spoke on landscape art as applied to home and school grounds. The interest was most intense from first to last, and the Society hopes to stir up the town to special work in civic improvement.

At the close of the meeting a practical turn was given to the work of this Society by a proposal that lady directors should be added, to whom especially should be committed the planning of work for the improvement of the town. A beautiful bend in the Saugeen river, near the town, was mentioned as already provided by nature with most attractive features, only needing a certain amount of care in the laying out and planting to make it a most attractive feature.

The school grounds had already been decorated, but much work remains to be done for improvement of the streets and other portions of the town. Walkerton is already a beautiful place, nestling as it does among the hills, with its parts diversified by the Saugeen river, and the ladies, every-

FIG. 2268. A MEETING OF GARDENERS AND FRUIT GROWERS AT OUR WALKERTON FRUIT STATION.

where the champions of civic improvement, will have here a fine scope for their ingenuity.

Lawn Grass.—At the Walkerton Horticultural meeting much emphasis was given by the writer to the importance of a beautiful stretch of lawn about the home. It should be open in the front of the house, and not cut up by gravel roads, nor spoiled by flower beds or shrubs which are in place along the borders; the lawn should afford a place where the young people may enjoy a game of tennis or croquet, and where the children may join in a romp or game of ball. When speaking on the same subject to the Brampton people, Mr. A. Gilchrist, of West Toronto Junction, who was also one of the speakers, suggested a good mixture for sowing such a lawn; his formula which he had tried and found most satisfactory even on unfavorable soil, is made as follows: Kentucky blue grass, 10 lbs.; Red Top, 1 lb.; Vernal, ¼ lb.; White Clover, ¼ lb. He advised trying bone dust as a fertilizer, sowing about twenty pounds of it to every 1000 square feet of surface.

Fertility of Orchard Soil is one of the important problems in Ontario, where the humus and the elements of plant food have been to such a large extent extracted by grain crops. Fortunately perhaps for the soil in our province, wheat raising is no longer profitable, and our farmers are being compelled to give attention to hoed crops, or to stock raising, both of which tend to restore its fertility.

Mr. Duncan Anderson, in his addresses at Bartonville and Grantham emphasized the great superiority of barn manures over commercial fertilizers, not because they contained any more potash, phosphoric acid and nitrogen for the same money invested, but because of the humus they furnished, without which it would appear that these elements cannot well be taken up by the plant.

Prof. Ladd of North Dakota station, has been making special investigations along this line and finds that as humus decreases in soils they become less productive, less retentive of moisture, and inferior in physical quality, while on the other hand it was found that an increase in the percentage of humus was accompanied by an increase in the percentage of phosphoric acid and also with a greater productivity of the soil. As the humus increases it seems to cause portions of the phosphoric acid, till then existing in a insoluble form, to become transformed into a soluble form, and thus, presumably, to become more ready available as plant food. The same is true as regards the potash, lime and other soil constituents. A decided increase of humus and nitrogen may be secured in orchard land by growing such leguminous crops as peas or clover, which are nitrogen accumulators.

The writer had signal success in a mixed orchard of pear, plum and apple trees, which were not growing well and producing very little fruit and that of inferior size. Crimson clover was sown in August, and the following spring a light dressing of ashes, about fifty bushels, and about fifty lbs. of bone dust, to the acre were sown, and the whole ploughed under. The ground was then cultivated until about August 1st, when the same treatment was pursued again. As a result the trees became quite thrifty, and bore generous crops of very highly colored fruit, seeming to prove that this treatment was almost ideal. The soil was a clay loam.

Gold and Wickson Plums. Both these much lauded varieties are condemned by Prof. Waugh of Burlington, Vt., in his last report, for the commercial orchard. The former he says is uncertain in bearing, and gives only light crops of small and second rate fruit. It

ripens unevenly and drops early from the tree. The Wickson is a beautiful fruit of beautiful color, good texture and moderate size; but the quality is not high, and the tree is of poor form and slow coming into bearing. We hope he undervalues this latter, for owing to the high recommendations accompanying its introduction, the writer was induced to plant largely of it; and no doubt many others have done the same. Of the Japan plums it seems that Abundance and Burbank are still the leading varieties for profit.

Lime Sulphur and Salt Again.—Mr. G. E. Fisher, who is most hopeful of the effectiveness of this wash both against scale and fungus, draws our attention to the following which appeared in a recent issue of the American Agriculturist:

A pioneer and enthusiast in the use of the lime, salt and sulphur wash as a remedy for San Jose scale is N. G. Creely, of Burlington county, N. J. In the early spring of 1901 the sprayed a twelve acre peach orchard of large three-year old trees that were badly incrusted with scale. The result was almost magical. Not only was the scale all killed, so far as a rigid inspection could determine, but the trees were uninjured, and making instead a phenomenal growth of leaf and wood. Notwithstanding the wet, rainy spring, the wash remained on the trees all summer and was plainly apparent at picking time. The spraying was interrupted by rains, but was continued as soon as trees were dry, and neither that applied before nor after the rain was washed off. The trees are now strong, healthy and remarkably clean.

The material is so inexpensive that it can be used freely. Mr. Creely uses a large force pump having 180 pounds pressure and can throw a solid stream seventy-five feet high. Vermorel and other fine nozzles are discarded and a straight one used that has an opening of about $\frac{1}{8}$ inch diameter. The stream is broken into a spray by putting the thumb against it, although he expects to use a metal cap for this purpose in the future.

It is applied in late winter or spring on dormant trees, and used in excess until it drips off the branches and runs down the trunk. There is no danger to the tree from using an excess. The whole tree is incased in coat of thick wash. Mr. Creely says that many peach trees in his vicinity have been injured by using petroleum, and the results have not been entirely successful, but this wash is harmless, effective against the scale and is cheap. He expects to spray the orchard again this spring, although confident that about all the scale is dead from last winter's application. He will also use it extensively on apples and pears. For apples he intends to add eight ounces paris green and four pounds copper sulphate to the 150 gallons, thus making a perfect spray against insects and fungous diseases as well as scale. He thinks one spraying with this compound may do the whole business. He believes that where the wash has failed in the east it is because it was used when cold, or was not properly compounded. His success has inspired others, and other large orchards will be sprayed this spring.

Orchard Institute Meetings.—Much credit is due our new secretary, Mr. G. C. Creelman, for arranging a series of fruit growers' meetings in the most important fruit growing sections of the province. The meetings are being held in the afternoons, first in a public hall at 1.30 p.m., adjourning to an orchard at 3.30, when practical demonstrations are given in pruning, grafting and other orchard work. These meetings will no doubt result in a better spirit of co-operation among growers so as secure the very best terms both in buying and selling their produce.

The Ben Davis seems to be the most popular commercial apple in the New England States. Prof. Waugh of Vermont has been securing reports showing the number of bearing trees and the number of young trees of Baldwin, Greening, Spy and Ben Davis. He finds that the planting of Baldwins and Greenings is considerably reduced in the recent plantings; the Northern Spy is holding its own, and perhaps gaining a little in Northern New England; while the Ben Davis outnumbers them all in the recent orchard plantings of nearly every state.

Co-Operative Cold Storage.—A number of large fruit-growers in the vicinity of St. Catharines, having realized the advantage and necessity of uniting together in some way, in order to prevent the great waste that was prevalent in seasons of full crops of fruit and to secure better and cheaper transportation facilities, formed, about three years ago, what is known as the St.

Catharines Cold Storage and Forwarding Co., Limited. This company has a capital stock of $10,000 in shares of $10 each, which is largely held by local fruit-growers in varying amounts.

During the summer of 1899 a complete cold storage warehouse was erected adjacent to the Grand Trunk R. R. tracks. This warehouse consists of a concrete building 36 x 60 feet, three stories in height, with walls of concrete twelve inches thick, thoroughly insulated on the inside with a number of dead air spaces separated by double thicknesses of matched lumber with insulating paper between.

The second or main floor, which is on a level with the floor of the ordinary freight car, contains three cold chambers of a capacity of about two carloads of fruit each, with a large receiving room and corridor leading into the cold rooms. The lower floor is similarly divided, except that the machinery room takes the place of the receiving room on the upper floor. The third floor is used for general storage.

The entire warehouse is fitted with the most approved machinery for the production of a temperature ranging from 33 to 40 degrees, as may be required, by means of compressed ammonia, which is forced through a six-ton ammonia compressor and subsequently allowed to expand in a series of coils, thus producing intense cold. By means of a powerful exhaust fan the air of the various rooms is so passed between these coils over which a constant brine spray is playing. This spray acts as a purifier of the air on its way, and it is returned to the rooms pure, dry and cold.

The air in the entire building makes a complete circuit in a very short time, when the machinery is in operation, and the results have so far been very satisfactory.

This company was one of the first to be in a position to take advantage of the liberal provision made in the Act passed by the Ontario Legislature, with a view of fostering this new industry amongst the dairymen and fruit-growers of the province.

The cost of the building and plant complete was about $6,000. The annual running expenses including power, attendance, insurance, taxes, etc., is about $1,500. This amount is raised partly by two methods, viz.: 1. A regular charge is made for storing perishable products in the rooms as per the following schedule, baskets 2 cents per week, 5 cents per month; bushels 5 cents per week, 10 cents per month; cases of eggs, oranges or lemons, or barrels of apples, 10 cents per month, three months 25 cents, and other commodities in proportion. In some cases a regular rental for a room or a portion of a room is arranged for. 2. A small shipping charge is made against all fruit shipped throngh the company, which undertakes to attend to all the details of procuring cars and forwarding the consignments, as well as furnishing ice (from their own icehouse) for such refrigerator cars as may be required during the season.

This system has given great satisfaction to the growers and shippers of the district and it is expected to assume large proportions in the near future. In 1900 about 200 carloads of fruit were sent out; owing to the fruit failure last season the output was only about 100 carloads.

So far the company has been carefully making its way and has been studying the problem of handling and storing perishable products in the most satisfactory manner and the results are most encouraging.

The enterprise of the gentlemen who have taken hold of this industry in such a practical way is deserving of the success which seems assured.

The president and secretary-treasurer of the company are Messrs. W. H. Bunting and Albert Pay, of St. Catharines.

The fruit-growers of Clinton are forming a company for the shipment of fruit in this way, and no doubt such companies will be formed in many parts of Ontario.

FIG. 2269. TREE PROTECTORS AT CENTRAL EXPERIMENTAL FARM, OTTAWA.

The Tree Protectors.—By some oversight the cut representing the tree protectors used at the Central Experimental Farm, Ottawa, was omitted from the February number, page 58. They were made of elm, and applied in the autumn. They were very satisfactory in preventing sun scald and injury from mice. The cost was $6.00 per 1,000.

Fruit Harvesting, Storing, Marketing is the title of a new book by Prof. F. A. Waugh, of Burlington, Vermont, which will very much interest those who are turning their attention to fruit culture, for we know of no other book covering the same ground. We are inclined to go further than the professor in some particulars; for example he leaves it as a matter of preference whether in harvesting apples they be packed at once, piled on the ground or taken to a packing shed. Now, in our opinion, the second plan is never advisable, for in such a heap exposed to sun and heat, the fruit will ripen rapidly. A cold storage house where the apples could remain until wanted, is ideal. Apples should not be rushed upon the market too fast, and this would avoid such an evil. But if one has not such a storehouse, then there is only one thing next best, and that is to pack and ship as fast as picked, and let somebody else have the advantage of storing the fruit before it is over-ripe.

We would go further also in the matter of grading. He makes the terms Select, First Grade and Second Grade entirely relative, having no reference to absolute qualities. We would make First Grade to have an absolute meaning and include only apples practically free from worm holes, scales or any other blemishes, and 2½ inches in diameter or upwards; excepting that for such dessert varieties as Fameuse, Swazie and Jonathan, 2¼ inches should be the minimum diameter.

Grading by machinery is not commended by Prof. Waugh. Now, we do not see how it is possible to secure uniformity of size without a machine, and uniformity of size is of first importance.

There is a promise of a great apple crop this autumn, and storage should at once be considered, if the best results are desired. Nor can we too early secure the sale of our fruit in such a season.

A Useful Garden Barrow.— The accompanying illustration, which is taken from American Agriculturist, shows a good way of enlarging a common wheelbarrow's usefulness. For carting away light rubbish, vines weeds, straw, dead tomato and egg plants, etc., it is just the thing. The attachment is simply a light rack frame fastened to the barrow in any convenient and simple manner.

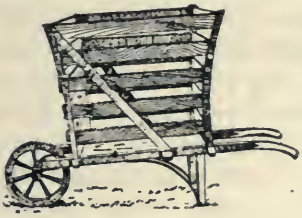


FIG. 2270.

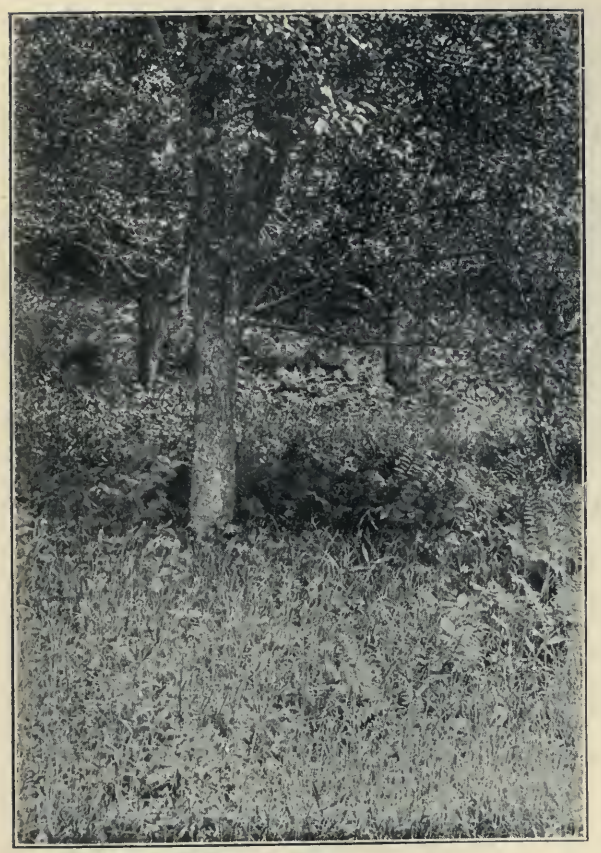


FIG. 2271. COVER CROP IN ORCHARD.

Cover Crops.—Prof. F. A. Waugh, of Burlington, Vt., sends us a note on this head as follows :—Speaking of cover crops, one must remember that they differ in value the same as anything else. Here is a photograph of an orchard, for instance, with a remarkably heavy and luxuriant cover crop ; and yet those apples have not borne anything but lichens and yellow leaves for ten years. This cover crop consists of ferns, "brakes," sedges and rank wild grasses, and has not been turned under since the trees were set, probably. This orchard, cover crop and all presents as fine an example of what not to do as one often sees.

Native Shrubs and Climbers.—In his address at Brampton, Mr. A. Gilchrist, of West Toronto Junction, said it was unnecessary to go to great expense in buying exotic shrubs for our school grounds when we have so many desirable natives that will bear transplanting and that will be equally effective from a landscape gardener's point of view. For example the following is a list :

Native Shrubs.

Sweet Fern.	Purple-flowered Raspberry.
Dwarf Shadbush.	Maple-leaved Viburnum.
Chokeberry.	Round-leaved Dogwood.
Native Apple.	Ceanothus New Jersey Tea.
Common Elder.	Common Meadow Sweet.
Red Osier.	Scarlet-fruited Thorn.
Witch-Hazel.	Red-berried Elder.
American Holly.	Cockspur Thorn.
Sassafras.	Mountain Apple.
Silky Cornel.	Snowball Guelder Rose.
Leatherwood.	Shadbush juneberry.
Shepherdia.	Alternate-leaved Dogwood.
Snowberry.	

Native Creepers.

Virginia Creeper.	Bittersweet.
Honeysuckle.	Virgin's-Bower.
Native Grape.	Canadian Moonseed.
Ground-nut.	Wild Bean.
Smilax.	Cat-Brier.

Native Trees for School Grounds.—Mr. Gilchrist also gave a list of native trees which are desirable, and we publish them here because soon Arbor Day will return and the boys and girls will want to know what they are to do. What could be a better lesson than to go to the woods and seek to identify and bring back one of each of the following list to plant on the school grounds?

Pin Oak.	Black Walnut.
Swamp Hickory.	Slippery Elm.
American Aspen.	Tulip Tree.
Hornbeam	Chestnut.
White Birch.	Shell Bark Hickory.
Swamp White Oak.	Corky White Elm.
Basswood.	Balsam Poplar (Balm of Gilead.)
Beech.	
White Elm.	Paper or Canoe Birch.
Sugar Maple.	Chestnut Oak.
Red Oak.	Pignut Hickory.
Butternut.	Mountain Maple.
Mossy Cup White Oak.	White Pine.
Black Ash.	White Spruce.
Buttonwood.	Balsam Fir.
Silver Maple.	Hemlock Spruce.
White Ash.	Black Spruce.
Red Maple	Red Pine.
White Oak.	Larch or Tamarac.

MEN WHO HAVE SUCCEEDED.

HENRY DALE, FLORIST, BRAMPTON.

FIG. 2272. MR. HENRY DALE.

FOR the inspiration of our young men who have in our fair Canada so many avenues open before them, but who so often lack that ambition which leads them to seek after advancement, we have undertaken to write a few sketches of men who have succeeded.

Of the long list of such worthy men, we may well speak with pride of Mr. Henry Dale of Brampton, who began at the very bottom and rose to the top of the ladder of success.

Some years ago he came from England to Brampton with his father, Mr. Edward Dale. At first the lad was apprenticed to a shoemaker, but this was not to his mind, and he persuaded his father to start a small truck garden for Brampton market. Then, about 1870, he induced him to buy a small greenhouse, which they operated in partnership, utilizing the experience which the latter had gained in England as a market gardener. In this greenhouse, which was only twenty-five feet long, and was heated with the old fashioned flues, they grew vegetables and pot plants; it is still standing and may be seen in our engraving, just next the Dale home.

From the very first the demand for their roses exceeded the supply, and enlargements were necessary. After two or three years, two houses were added, fifty feet long, for spring stock and bedding plants, in which they also planted some Marechal Neil and Lamarque roses. On these they budded Sunset and Pearl, and took the bloom in boxes to Toronto, selling it to Mr. Fleming, who was so long a prominent florist on Yonge Street.

In about 1880 Mr. Edward Dale gave the cut flower business up to his son Henry, who had always been the life of it; rose and carnation houses were added from time to time, indeed, of late almost every year, until now about seven acres of ground are under glass.

The greenhouses require 36 boilers of fifteen horse power each for heating them, and have automatic machinery for furnishing the coal so as to economize the labor as much as possible.

Fig. 2273. The Dale Greenhouses.

FIG. 2274. IN THE DALE GREENHOUSES.
View in Rose House, showing new style of benches.

Six of these rose houses are 840 feet long, and contain about three acres of roses. These are cut morning and evening, through the winter, but in April and May during the height of the season, from 6000 to 10,000 blooms are cut daily and shipped away wholesale to the large cities of Canada and the United States, at prices varying from $6.00 to $30.00 a hundred.

The death of Mr. Henry Dale, which occurred in July, 1900, at the age of forty, was a shock to his large circle of friends, whose sympathy evidenced itself in a wealth of floral emblems from the many societies of which he was a member, and from his many personal friends.

A Visit to the Greenhouses—Happening to be in Brampton on the 7th of March, we were received most cordially by Mr. T. W. Duggan, the manager, and conducted through these extensive greenhouses. "Already," he said, "we have the leading business in America in the cut flower trade. We have now 300,000 square feet under glass, and intend to add 100,000 more this spring; indeed we have doubled the amount of glass since Mr. Dale's death."

Will you not over do the thing and produce more cut flowers than you can sell to a profit?

"No," said Mr. Edward Dale, the foreman, "it is not likely, because we are only building what we are forced to do to supply the demand. We must build or some one else will have to grow flowers to satisfy the growing trade."

Do you grow many varieties of roses?

"No," said Mr. Duggan, "about six or eight varieties are all that will pay to grow for the cut flower trade, and of these the chief are the Bride and the Brides-maid. Next to these the new rose, J. Pierpont Morgan, which you see is a free bloomer, and a perfect flower. Next would come the Sunset; and then the Meteor, Perle and American Beauty."

Are not these benches lower than usual?

"Yes," said Mr. Duggan, "these are quite a new style, but vastly better than high ones. You see they are of brick and built over tiles which secure perfect drainage, and also perfect circulation of warm air."

FIG. 2275. IN THE DALE GREENHOUSES.
A view in one of the Carnation Houses.

What soil do you use?

"The soil," said Mr. Edward Dale, "is made from the old turf off a clay loam meadow. We cut it six inches deep, and pile it over winter, then in spring mix it with a little manure, and fill up the benches. The old earth we take out every year and put it back on the meadow."

How often do you water?

"About twice a week, oftener if necessary, using the hose. This, we are using to-day, is manure water, which we apply about once in three weeks."

What are your chief insect enemies?

"The green fly and red spider. The latter we kill with constant sprays of water, and the former we kill with fumes of nicotine."

Do you propagate the roses by budding?

"No, we find grafting easier. One man does it all. We splice graft them while in these small pots, using no grafting wax, simply tying with a string, then we place them for a few days under cover where the air is very moist. This season we have grafted about 35,000, and about 98 per cent. have grown."

What are the commercial varieties of the Carnation?

"The best," said Mr. Edward Dale, "are Glacier (white), Marquis (pink), Roosevelt (crimson) and Crane (scarlet). These of course we replant every year, and we set about 100,000 plants. We set the young plants out of doors for the summer, and put them on benches in September, by which time they are good and stout."

What is your method of ventilation?

"It is automatic. These boxes enclose a thermostat, a delicately adjusted instrument, which regulates the water pressure, and can be arranged to open the sash at any desired degree of temperature."

We came away quite thankful for the kind attention we had received and quite impressed with the possibilities of life. Brampton is a interesting old town, with intelligent and progressive inhabitants, but with no special advantages for the location of such a greenhouse; yet with nothing but sheer ambition and business devotion, Mr. Henry Dale has worked up the leading cut flower trade of North America.

FIG. 2276. IN THE DALE GREENHOUSES.
A view in the Violet House.

THE SAN JOSE SCALE.

AT a meeting of the Niagara Peninsula Fruit Growers' Association held in St. Catharines, on the 8th of March, representatives were present from many parts of this extensive fruit district. A report of the San Jose Scale committee was presented by Mr. W. J. McCalla which was as follows:

Notwithstanding the efforts that have been put forth during the past year looking to the destruction of this pest, the Scale is still with us and in increasing numbers. So much so that those whose orchards are infested, are becoming greatly alarmed at its progress, and the resulting damage; while those whose orchards are not known to be infested are waking up to the great danger which menaces them.

Your committee regret that they have not had an opportunity to personally visit and thoroughly examine many of the orchards in which Scale exists, but by diligent inquiry, and by observations which they have been able to make, have arrived at the following

FIG. 2277. FEMALE SCALE (HIGHLY MAGNIFIED).

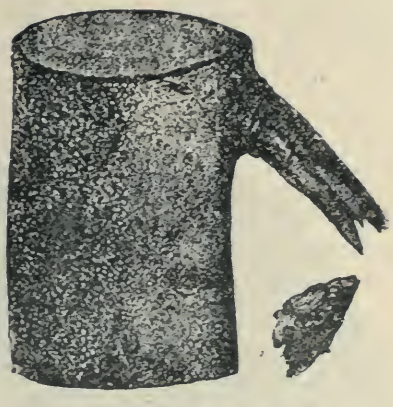


FIG. 2278. CUTTING INFESTED.

conclusions, and beg to submit them for your consideration.

1. That in view of the serious danger resulting from this insect, it is the duty of this association to urge upon its members and the public generally the necessity of making every effort wherever scale is located, to induce those interested to co-operate with the inspector and his assistants in their work, in order that a full and complete inspection may be instituted in all such orchards with a view to control and if possible eradicate this insect.

To this end it is very necessary that as a preliminary operation, all infested trees and orchards, if not already attended to, be at once thoroughly pruned and cleared of all surplus and unnecessary branches and loose bark, or anything which might prevent the spraying material reaching all the scale.

2. That the materials and methods which from past experience and the most reliable information, give promise of the best results, are the following:

(*a*). For all trees, except peaches and cherries, crude petroleum, a 20 or 25 per cent solution in combination with water. For peach trees, whale oil soap, 2½ lbs. to the gallon of water. In the case of the crude oil, care should be taken to cover the tree but once, and in order that an undue quantity of oil be not used a very fine nozzle should be employed.

(*b*). That a combination of whale oil soap and crude petroleum in the proportion of one pound of soap to the gallon of water, with a 25 per cent solution of crude oil added, has proved very satisfactory in destroying the scale.

(*c*). That the lime, sulphur and salt treatment, which is in general use in California, while tried in this country in as yet but a very limited way, has nevertheless given evidence that it may prove very useful here, and it is suggested that this treatment be given a more extended trial during the coming spring and summer.

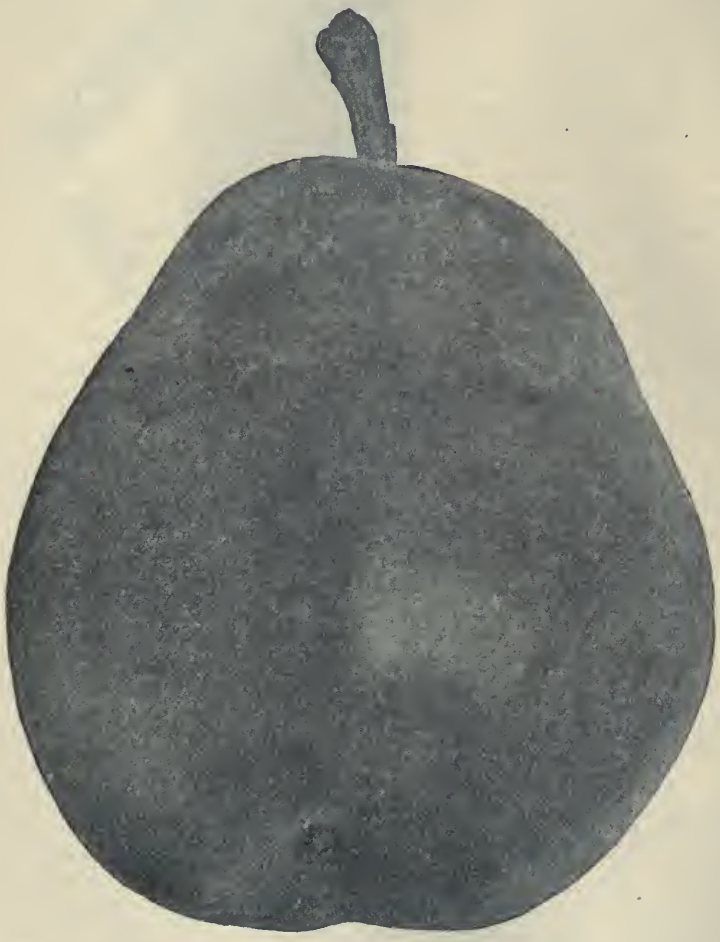


FIG. 2279. EXPORT PEARS—THE DUCHESS.

(*d*). That where peach trees are badly encrusted, it is the opinion of your committee that the best and most satisfactory way of dealing with them is to destroy them at once by fire.

(*e*). That inasmuch as great danger of the further spread of the scale may result from nursery stock which might be infested, it is hoped that the law in respect to fumigating all such trees and plants be rigidly enforced.

3. That this association urge upon the Department of Agriculture the desirability of supplying a few suitable combination pumps in certain localities where scale exists, where the properties are small and where no suitable pumps are in the hands of the owners, and if possible at least six of these pumps be furnished in time for this season's work, and that they be placed in such sections as the inspector shall deem most expedient. It would also seem necessary to employ competent men to operate these pumps, whose services should be paid for by those desirous of availing themselves of their assistance.

4. That the amendment to the San Jose Scale Act, as amended and introduced by the Minister of Agriculture, receive the hearty approval of this association, and it is recommended that the various municipalities of this district take steps to put it into force.

5. That this association again put on record their appreciation of the efforts put forth by the Minister of Agriculture of this Province in assisting and furnishing material for treatment on such liberal terms, and for the great interest taken in this matter ever since the discovery of Scale in this country.

We moreover believe that these have resulted in confining the Scale largely to those sections in which it was originally located.

It is hoped with the knowledge gained and with a more thorough and complete use of

the proposed methods of treatment, that the coming season may see some very tangible results in reducing the infestation of Scale in all localities where it may have obtained a foothold.

"*Will crude petroleum kill the cherry aphis?*" asked one who had lost his whole crop by it. The inspector said, "Yes, if applied early enough."

"*When is that?*"

Just before the leaf buds open. The young lice hatch out in advance of the leaves, and may be seen with the microscope to be quite lively at that time. That is the time to kill them with crude petroleum, or with kerosene emulsion. "With the former," said Mr. Fisher, "don't hold the nozzle in one place till it drips; just apply a thin mist, and you will do the trees no harm, while you will destroy the aphis."

Cherry Aphis.—Mr. D. J. MacKinnon at the same meeting asked if the cherry tree would bear treatment with crude petroleum for aphis. Mr. G. E. Fisher said they should receive a very light application. The ordinary vermorel nozzle has too large an opening, but with a smaller opening, about the 40th of an inch in diameter, it would be possible to treat all kinds of trees with crude petroleum, before the leaves were opened, without evil effects.

Seasonable Work. — People have queer ideas, continued the inspector. They waste their time spraying out of season. This is the time to prepare your trees, and get ready. The trunks must be scraped; the trees must be closely pruned; the pumps and nozzles be put in order, and all other work got out of the way so that about May 1st, when the buds are nearly ready to open, nothing will be in the way of doing thorough work.

* * * * * *

FIG. 2280. EXPORT PEARS—ANJOU.

PEARS FOR EXPORT.

Pear growing for export was the subject of a most practical address at the same meeting by Mr. D. J. MacKinnon, of Grimsby. A few years ago, he said, I purchased a worn-out farm, of which the lower part was not planted. The soil of this part consisted of a black clay loam from 12 inches to 2 feet in

depth, and the subsoil was a quick sand, almost always saturated with water. This I prepared for my commercial pear orchard by a complete drainage system. Through the lowest part I ran a drain five feet deep to the lake, and into this I ran side drains 60 feet apart, so fitted as to empty vertically and never clog.

Varieties.—Being satisfied that pears in cold storage would carry safely to the

FIG. 2281. EXPORT PEARS—BARTLETT.

British market, I next planted 2,700 trees. I planted too many varieties.

"*What varieties would you plant now?*" someone asked.

"I would plant Duchess, Louise, Bartlett, Anjou, Kieffer and Hardy."

"I would add Howell to the list," said the writer, "and Bosc."

"Well, my Bosc trees are not good growers, and that is the fault I find with that variety."

"Top graft them on some good grower, and they would do better," was the reponse.

"*What is the Hardy like?*" asked a grower.

"It is a beauiful, smooth, even sized variety, of excellent quality, of about the same season as Duchess: the tree is vigorous and never blights."

"*What distance apart did you plant?*"

"Well, for the most part the rows are twenty feet apart, and the trees ten feet apart in the rows, every other a dwarf. I wish now they were all about 16 x 16, and the dwarfs by themselves."

Tillage.—I gave the pear orchard clean tillage at first; but later I tried rape, crimson clover and cow peas, and they all seemed to fail on stiff clay, without a special manuring. Clean tillage I found induced pear blight; so I sowed clover, and since have not applied barn manure to my pear orchard, and indeed the soil has not seemed to require it, for I have had beautiful large, high colored fruit, and excellent growth of wood on the trees. Crimson clover has done well with me; I sowed it in July, and cut it in the following June, disked the ground, and it reseeded itself. I ploughed the ground in July, a week or two after it was cut, and it came up a thick heavy crop, too deep rooted to be scalded by the hot sun.

* * * * * *

Fruit Growers' Institutes.—Mr. L. Woolverton addressed the meeting in the absence of Secretary Creelman, on the advantages

of the affiliation of all local Fruit Growers' Associations with the Provincial Society, so as to work in greater harmony. The plan of work would be somewhat like that of the Farmers' Institutes, and meetings would be held during March and April over the whole country, and be addressed by a fruit expert. The membership fee would be 25 cents. Mr. W. H. Bunting also spoke on the same subject, viewing the scheme with much favor, and he moved the following resolution which was unanimously passed, viz.:

Resolved that this association learns with pleasure that the Department of Agriculture has taken steps through the Secretary of the Ontario Fruit Growers' Association, Mr. G. C. Creelman, towards organizing throughout the Province in the various agricultural district, Fruit Growers' Associations which will affiliate with the Provincial Association, and will be a channel through which the fruit growers of this Province may act in unison on matters which may arise in which concerted action may be advisable and necessary.

* * * * * *

ORIGIN OF THE AMERICAN GRAPE.

Dr. Jessop, M.P.P., of St. Catharines, gave an address on the origin of the American grape, which was very instructive. It dealt with the origin and history of the *Catawba*, that first great American grape, still one of the leading varieties in cultivation, found wild in North Carolina in 1802; the *Isabella*, introduced from South Carolina into New York State in 1816 by Mrs. Isabella Gibbs; the *Diana*, a seedling of Catawba, exhibited at Boston in 1843 by Mrs. Diana Crehore, the originator; the *Concord*, a seedling introduced by Mr. E. W. Bull, of Concord, Mass., about the year 1850; and the *Clinton*, now widely used in Europe as a stock on which to graft other varieties because of its immunity from the dreadful phylloxera.

FIG. 2282. EXPORT PEARS—THE BOSC.

THE FRUIT GROWERS OF PRINCE EDWARD ISLAND IN PARLIAMENT.

FATHER BURKE THE NEW PRESIDENT.

IF any note more than another ran through the recent annual meeting of the Fruit Growers' Association of this province, that note was hopefulness. There is great hope in the fruit industry all over the Federation, and Prince Edward Island is especially hopeful. She knows now unmistakably that she can grow excellent apples, plums, cherries and even pears; all the small fruits and berries she likes ; there is no serious pests menacing her orchards ; no dishonest packers within the borders ; she is nearer the great British Market than the rest of Canada, and her sons are awakening to the great things that are for them in fruit-growing. The governments, too are recognizing the value of the work the association is doing, and we are disposed, both Federal and Provincial, to act more generously with it in future. We are agog, then, with expectation.

Briefly, we might say that the usual range of association matter was traversed. at Charlottetown, on the 11th. President Bayfield's address narrated the steps taken during the year and pointed out the new year's duties ; the papers by J. S. Clark and Richard Burke, Fruit Inspector, on "Apple Growing Generally" and "Cranberry Culture" and the numerous able addresses, by Judge Fitzgerald, F. L. Hazard, K. C., Professor Macmillan, John Newson, John Robertson, J. H. Gill, J. Guard and, John Johnston, on some phase or other of Horticulture, gave the meeting all it could well consider. And I had pleasure in intrepreting the message of good will and Godspeed confided to me by the Association of Ontario, which was joyfully received and heartily reciprocated. I also, attempted to to convey a few of my impressions on your splendid organization, your meeting, your men, and what you transacted at Cobourg. An interchange of experience does much good.

The work of the Annual Meeting is synthesized, in its resolutions. We were anxious

FIG. 2283. EXPORT PEARS—THE LOUISE.
(Page 141.)

to help on the general demand for better transportation, cheaper carriage, more honest packing, and a proper appreciation of the possibilities of this fruit interest of Canada. There has been so much reported on those subjects that it would not be well to load your columns with anything of what was said here. These resolutions were forwarded to the right quarter:

Moved by Mr. John Newson, seconded by Rev. R. E. Burke,—

Whereas great dissatisfaction prevails all over Canada, owing to the exorbitant rates charged by railways in the carriage of fruits in barrels or otherwise ; and whereas the matter has without any good result been repeatedly brought to the notice of such railway corporations, by resolution and delegation.

Therefore resolved, as a means to the proper adjustment of this important matter, Parliament be and is hereby requested to name a competent and representative railway commission for the equitable regulation of the transportation question.

Rev. A. E. Burke, moved the following, seconded by Mr. J. H. Gill,—

Whereas it is vital to the fruit exporters of this province to have a properly equipped steamer leave Charlottetown for England at a regular period in the late summer and autumn months at least;

And whereas great inconvenience and loss have occurred in the past owing to this great want;

Resolved therefore that the govenrment be requested to secure in time and properly advertise the sailing of some well equipped ocean liner, so that the fruit-growers of this country may take advantage of well ventilated holds to transfer their apples to the markets of Great Britain.

F. L. Haszard, K. C., moved, seconded by A. A. Moore, that the Federal Government be requested to appoint a competent person to travel throughout the province and give instruction in orchard planting, cultivation, grafting, pruning and generally in all the operations of orcharding.

Judge Fitzgerald, as supplementry to his remarks on the necessity of beautifying the province and particularly attending to school grounds, moved, seconded by D. P. Irving, M. L. A., that the Department of Education be requested to address a circular letter to the several school districts, asking that a special effort be made this spring to have Arbor Day observed by the planting of shade trees about the school houses.

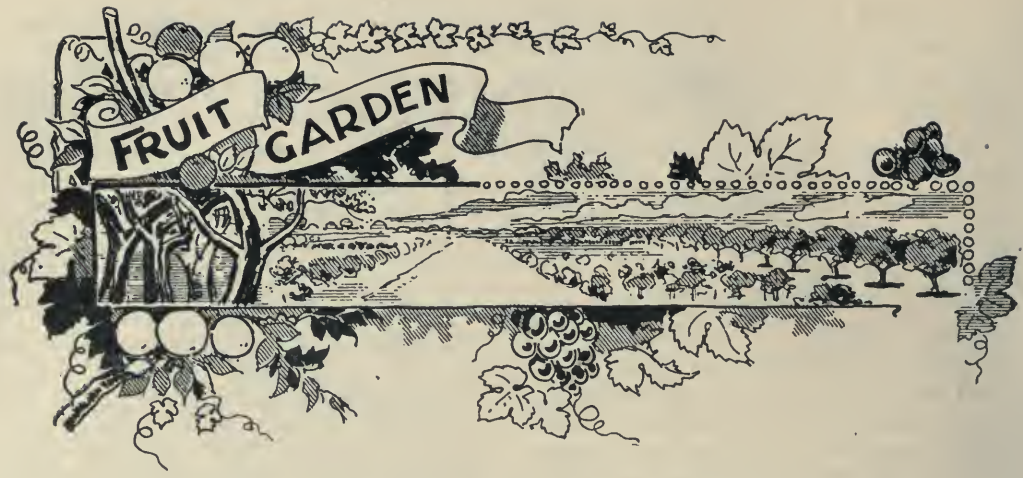
A number of other minor resolutions were gained and the usual vote of thanks, condolence, etc., passed. The sympathy of the meeting was extended to the late president, H. A. Stewart, of Hamilton, since dead. Mr. Stewart was a true friend of Horticulture and his devoted services to the Fruit Growers' Association of Prince Edward Island, will be long remembered.

The elections resulted in favor of Rev. A. E. Burke, for president, J. Johnston, vice-president and Albert E. Dewar, secretary. The Board of Directors contains a few new names ; William Wells, Alberta ; James Ramsay, Hamilton, and John A. Annitt, Manitoba, having never before served.

The question of bringing the Fruit Growers' Association into closer touch with the Institute system, was mooted, but no action taken. Professor Macmillan expressed his desire of doing all he could to forward the association's work. The new officers will certainly prosecute a vigorous and enlightened policy in the interest of Horticulture, and with the assistance of the Federal and Provincial Department of Agriculture, can easily make 1902 a banner year in Prince Edward Island, may we move forward together all along the line.

A. E. Burke.

Alberton, P. E. I.



THE QUARTER ACRE STRAWBERRY PATCH.

BY T. C. ROBINSON, OWEN SOUND.

HOW CAN A STRAWBERRY CROP BE SUCCESSFULLY PRODUCED ON A SMALL SCALE?

THIS is a burning question. Our cities and large towns are well supplied with berries, particularly in the Western Peninsula of Ontario, and the business of supplying them is well done, if not overdone, by large growers in the Oakville and Niagara districts. But there are many villages and small inland towns that are very poorly supplied, and the price is consequently high. Such markets offer the largest profits to the small grower, and many a family with only a large garden and small means might be greatly assisted in the battle of life by raising one or two thousand quarts. Hitherto such parties have been hindered not only by lack of familiarity with the best methods of culture, but by the first cost of the plants. Many, doubtless, would be glad to try it if they could know how easily the strawberry can be raised, how well certain varieties will bear with very little manure, and especially if they knew of some way of applying "common sense and elbow grease" so as to reduce the preliminary outlay.

Besides this class there is the multitude who, finding the price of berries so high in districts remote from the great fruit-growing districts, would like to grow an abundant supply for family use. It is to these classes that the following plan may be of special interest.

First Then as to Soil.—Any good garden soil will raise good strawberries. A good clay loam will perhaps raise the largest crop, but the fruit will not be early, the soil will require more labor to keep it nice and loose, and it must be free from standing water at all seasons, except just after a shower. A good gravelly loam will often give remarkable results both as to amount of crop and size and quality of fruit. Probably the best soil for the purpose is a well-drained loam containing sand and clay in about equal quantities. But even the lightest and poorest sand or gravel that ever grew corn or white

FIG. 2284. EXPORT PEARS—THE HOWELL.
(Page 141.)

beans, will will not refuse to grow strawberries enough to please the horticulturist, if he chooses suitable varieties and gives them fair treatment. As a rule, the lighter the soil the earlier the crop. Earliness is also favored by a slope of the land towards the south or southeast. Heavy land inclining towards the north will give the largest and latest fruit.

Manure.—With the land comes the question of manure. A land of natural fertility is generally preferable—almost new land or land broken up from pasture or a clover crop a couple of years previously. But pasture land is unsafe the year it is broken up, and sometimes the next year, because it is apt to be infested by the dreaded "White Grub," which loves to feed on the roots of the strawberry plants. As a rule, the richer the land the more profitable the crop. You cannot easily insult the strawberry with manure. Fifty loads to the acre would just suit some varieties, while others will not refuse a crop with none at all. It is strawberry wisdom to give just what you can afford. Let us suppose you apply five loads to the quarter acre.

Now if the soil is selected, but the manure has not been applied, **don't plough it under.** Strawberry roots feed near the surface, and and the essence of the manure may go down, but will not come up. So plough the land first. Then put on the manure. If it is well rotted, all the better. If it is even quite fresh, still it will do. It will do if it is well worked in. The fresher it is, the more it must be harrowed in, or it will scorch the roots. Get the disk-harrow on it first, especially if there is much straw in the manure.

Then let the common harrow, or better still, the spring tooth harrow, run up and down, cross-wise, and angle-wise, again and again ; then, if any straw stuff shows, get a good heavy roller driven over it, then cut into it all over with the disk-harrow once more, smooth it with the back of the common harrow, roll it finally and send the team home. A good half-day's work of a good team thus **fining** the land will be a fine investment. If the manure was well rotted, you had better plant immediately ; but if it was rather fresh, give it a week or ten days to part with its inflammation to the gentle poultice of the soil. Have the land all ready for planting about 20th April if situated in the warmer parts of Ontario, or by 1st of May in the colder districts.

Planting.—Now for planting. The most convenient way to arrange the row will be to use a marker. A sort of sleigh-runner arrangement that any man can make in an hour or two will be convenient. One cross piece of thin batten or siding, 12 feet long,

with little "sleigh-runner" pieces nailed underneath, 3 feet apart—each runner 16 or 18 inches long—the whole pulled by a couple of 10 foot handle pieces united by a cross piece at the outer end and well braced to the long cross piece will make five marks a yard apart; and by letting the outside runner go in the last mark every trip across the patch will mark out four more rows. But the long cross piece must be thin enough to bend readily, or else when you pass over some slight elevation or hollow in the land you will find one or more of the "runners" riding in the air instead of marking. Now when your patch has all been marked for the rows, it is well to go over it again crosswise and mark where each plant is to stand in the row. If you have lots of plants or plenty of money to buy them, you can secure an immense crop by setting the plants every foot or fifteen inches, and you can increase increase the crop still further by setting out the rows in pairs only a foot apart with paths two feet wide between each couple of rows and the next. By keeping the runners off and the ground free from weeds and then "mulching"—that is covering ground with straw or waste hay, or, better still, with a two inch coating of half rotted manure in September, the loose strawy parts to be drawn up over the plants in November, when pretty well washed out by the late fall rains—you will have ensured the largest crop of the finest berries, so far as one season's human efforts can do it with the means at command.

But a quarter acre patch set out by this method would require about seven thousand plants, which, if to be purchased, would entail far too much expense for most people. I propose to show how it can be done with only about one sixth of that number—and well done—and the time spent in planting will also be far less, but it will take more time later on. To this end I advise setting the plants over three feet apart in the row. Take the same 3 ft. marker and run it across the rows. Do not run it "square" across, but **diagonally** at an angle of about sixty degrees. Then when a plant is set at every point where the marks cross, the plants should stand slightly over forty inches apart, and each plant will be exactly opposite the middle of the space between the nearest two plants in the next row, and so on; that is, every plant will be just about 40 inches from the nearest plant in every direction.

This will make it possible to save nearly all hoeing for nearly half the summer by running the cultivator across the rows as well as lengthwise. I recommend the common hoe as about the best tool for planting by this method. Let it be one with a large blade. The common happy-go-lucky style of spade-planting will not do when the plants are so far apart. You want every plant to live, and with fair treatment they may. Strike with the side of your hoe in

FIG. 2285. EXPORT PEARS—THE KEIFFER.
(Page 141.)

the middle of the mark, and scoop out the earth as deep as the length of the roots that are to go in. Make only twenty or thirty holes before you plant, if you are doing the work alone, keeping the roots of the plants meanwhile in wet moss or moist earth, **but not in water** lest they rot. Give each plant a jerk, to spread out the roots as you put it in the hole; lean it against the side next the mark, and set it so it will stand nearly an inch deeper than it stood originally, to allow for the settling of the soil; but be careful not to cover the crown—that is the top of the thick stem from which all the leaves spring. Now scrape with your foot about half the soil that was hoed out back in on the roots so as to cover them well up to the stem, and then step in the hole. Do not be afraid to lean your whole weight on the soil just over the roots. It is life to the plant to **firm** it well.

Now if the soil is rather dry, and the day hot, this is the point to apply half-a-cupful of water, and let it soak away before filling up. But in early planting, the plants are so nearly dormant, and the soil so moist that that no watering will be needed. Just scrape in the rest of the soil with your foot and go on, but be sure to leave it as loose as possible on the surface. Now you will find it has taken only a little over one thousand plants to set out your quarter acre.

OUR FRUIT INTERESTS DISCUSSED.

THE FRUIT MARKS ACT.

WHEN a man does wrong in any of his public dealings he never does it because he loves to do it but because his neighbor is permitted to do it. When he packs his apples for market he does not put the large ones at each end of the barrel and his culls in the centre because of any natural inclination to cheat or deceive, but because his neighbor is allowed to do it, and he cannot afford to let his neighbor have an advantage over him. Now that the Fruit Marks Act has been introduced and is being enforced, the farmer or fruit grower is hard to find who does not approve of it and hail it as one of the best things that the Fruit Growers Association has yet done for the general public. I meet with many farmers and in speaking of the Act they all admit that it is a good thing, and that we will soon have honest packing if it is properly enforced.

Mr. Elmer Lick will bear out the gist of this testimony, I think so far as this County is concerned. Mr. Lick visited this County in institute work, and I never saw a greater interest taken of the farmers generally in what a speaker had to say than they did in Mr. Licks talks in connection with the Fruit Marks Act, and the handling and shipping of apples generally. On the working of this new measure and the result that it is aiming at, Mr. Lick could speak with authority and he found the farmers willing and anxious to hear him. No fruit representitive ever did better work, work that left an impression, and calculated to lead to good results than Mr. Lick did through this district this year. The Fruit Marks Act is all right, and it is

already evident that the public are going to accept it as a good thing.

Mr. W. N. Hutt did an equally good work in another line which must lead to good results through this western section of the province. It is in fact greatly to be deplored that there are very few new apple orchards being planted, and very little care given to the old ones through many sections of the west now-a-days. I think I see in the Fruit Marks Act, and the object lessons which Mr. Hutt is giving in pruning and grafting, a fair promise of a revival in apple culture. I happened to have charge of the Institute meetings in one or two localities here when Mr. Hutt was in the Country, and was told that it would be time wasted to start him talking about pruning apple trees. I took the risk, however, and the result was most gratifying. Mr. Hutt's object lessons in pruning are still being talked about, and if they could be supplemented in a number of localities not reached, I know the results must be good. Mr. Creelman I believe, has in view a scheme that will meet this suggestion, as soon as he can secure a sufficient staff of practical demonstrations to meet the requirements of the several districts yet untouched. He cannot get his scheme into operation too soon, and he cannot get any man who will do it fuller justice than Mr. Hutt. If all the other apple growing districts of Ontario have been as well served as this one has been this year by Mr. Lick and Mr. Hutt, we may look for an early and general revival in the interest taken in apple growing throughout our magnificent province.

T. H. RACE.

Mitchell.

SOME INSECT ENEMIES AND HOW TO FIGHT THEM.*

BY PROF. W. LOCHHEAD, O. A. C., GUELPH.

THE PLUM-TWIG GALL-MITE.

ON Feb. 27th, I received from Mr. Geo. E. Fisher, Freeman, Ont., a package of plum twigs which had peculiar rings of small, gall-like growths at the base of nearly all the buds. Mr. Fisher stated in the letter of transmittal that the twigs were obtained from an orchard near Queenston, and that the orchard was suffering from the injuries sustained.

On cutting open one of the galls, I saw at once that the interior (often with more than one cavity), was filled with a large number of minute white mites, which at this season are dormant. Under the microscope they were seen to be elongate-oval, four-legged, and provided with whip-like appendages at the tail end. Unacquainted with this particular form of mite, I applied to Dr. Howard, of Washington, for information, who informed me that the mite was the Plum-Twig Gall-mite of Europe, *Eriophyes* (*Phytoptus*) *phlæocoptes*, and that it had probably been intro-

*Notes from the Biological Department of the Ontario Agricultural College.

duced from Europe on plum stock. It appears that this Gall-Mite is now quite widely distributed over the north-eastern part of the United States.

Prof. Slingerland, of Cornell University, described the work of this same mite in the December number of the Canadian Entomologist for 1895. His specimens came from a plum orchard in Pennsylvania.

So far as I am aware, the life-history of the mite is not well known. It appears, however, to migrate early in the spring from the gall to found new galls. This fact suggests two lines of treatment: 1st, to spray with kerosene emulsion or whale-oil soap solution, when the mites are leaving their winter quarters; and 2nd, to prune heavily in early spring, cutting away as many of the gall infested twigs as possible, and burning these immediately. It is doubtful if the first treatment could be carried out with any degree of success, for the mites are so minute (about 1-180 inch long), that few orchardmen could observe the migration. Besides, we are not quite certain as to the exact date or time of migration.

The pruning treatment seems then to be the only practicable one, and if the method be carefully followed for one or two seasons it will have a decidedly beneficial effect.

FIG. 2286. PLUM-TWIG GALL-MITE.
Two Plum Twigs affected by Plum-Twig Gall-Mite. The galls (*a*) are small and are arranged in circles at the base of the buds.

APRIL.

The pretty herpaticas hid in the brake,
Are calling the alder and cat-kins to wake;
Miss Dogwood is dressed as a beautiful bride,
And seeks in the shadows her blushes to hide.
The bonny-blue violets rustle and glow,
All wrapped in their flannels tucked under the snow!
Thy feet, welcome April, I hear on the hills,
And thy laugh in the sound of each girgling rill.
The old brown is turning to emerald hue,
And the meads and the woodlands are clad in the new!

I joy in thy brightness, I drink of thy light,
Kiss the hem of thy garment all broidered with white.
With a smile on thy lips, and a tear in thine eye,
Thou art come fickle April, so lovely and shy!
All birds are thy orchestra, glad in thy wake,
The prince of the forest, the mountain, the lake!
The earth owns thy power on land and on sea—
Oh, welcome sweet April, thou child of the free!
The ice king recedes when thy step draws a near,
And the tulip and crocus cry, lo, spring is here!

SEASONABLE NOTES FOR APRIL.

THE unusually fine weather experienced here in this section of Ontario during the early part of March, makes it somewhat difficult at this date—March 12th—to outline very closely what operations may be necessary or adaptable for the month of April amongst the plants and flowers. With the mercury registering about 52° at midnight, 70° in the shade at mid-day, and the pleasant warbling of robins and greybirds greeting one on every side, to say nothing of reports of sowings of sweet peas, etc., having already been made in the open ground, it is difficult to realize that we are yet three weeks and more from the beginning of April, or yet clear of winter weather. It is spring seasons such as this that tempts those who have tender or half hardy plants to expose them somewhat too abruptly from their warm winter quarters to the uncertain weather conditions that often follow these seductive spells of summer in early spring. The transfer of plants from their winter quarters to out door life always requires the exercise of care and discretion, much more in seasons such as the present one when spring promises to be unusually early.

A word or two of timely warning may prevent the loss of some favorite plants. I am aware from my own past experience that reminders of this kind are necessary at this season of the year, when we are perhaps too eager in anticipating the delights of summer in the garden, by undue haste in exposing tender or half hardy plants to uncertain weather conditions outside.

THE GREENHOUSE.

Bedding Plants.—The latest struck cuttings of these should now be potted off, so as to become established in the pots prior to being hardened off outside later on.

As a rule carnations, geraniums, mignonette, early sown asters and other comparatively hardy plants can be transferred to a cold frame outside. A sash as well as other protective material should, however, always be in readiness to cover them up with in cold weather. Coleus, heliotrope, lobelia and the more tender varieties are safest in the greenhouse until all danger of frost is past. It is always wise to shade plants for a few hours in the hottest part of the day for perhaps a week until the growth has become hardened to the more exposed position that

a sash and frame gives, especially if the plants have been kept in a very close greenhouse. The little dwarf growing bedding plants known as alternanthera are often very difficult to secure cuttings from for propagation purposes. A good warm (not rank) hot bed is the best place to put stock plants of alternanthera in to secure rapid growth. Plunge the pots or boxes into earth or ashes up to the rim and keep them close except on sunny days. Young plants as well as stock plants can be made to move rapidly by this treatment. Heliotrope, coleus and achyranthes can be treated in the same way, but these last mentioned require more air than the alternantheras do, on bright days, and perhaps a little shade on very hot days.

Cannas.—Roots of these plants should be brought from underneath the benches or from the warm cellars where they have been wintered in. If the clumps are large it will be best to divide them up into clumps having from two to four good strong eyes. This can be done by simply breaking away the one section from the other with the hands. The use of the knife in this operation should be avoided if possible. Pot the small clumps up into fairly light soil and water thoroughly once. Very little water will be required afterwards until the plants have become well established. Cannas treated in this way can be brought on early and give immediate results when planted out. The pots of these can be stood down on the walks to start them, if the situation is not too dark, and care is taken that they do not get too much water. The possibilities of the canna as a summer decorative plant are only commencing to be realized. The recent introductions of dwarfer growing, large flowering plants will assist greatly in advancing their present popularity. It is quite possible, taking the coleus as an example in this respect, that we may see as great an advancement in cannas in regard to decorative foliage during the next decade as there has been with coleus, when compared with the first introductions of the "East Indian Nettle," as coleus where at first commonly termed. Imagine a canna of dwarfer habit than the Charles Henderson (three feet), a spike of flowers equal to the flowers of the Burbank Canna, and foliage that will vie with the beautiful markings and rich coloring of a pandanus veitchii, or of a spotted diffenbachia, or with the deep rich shadings of a maranta; and you will have an imaginary glimpse of what I predict will be a near approach to the ideal canna of the future. But this is prediction and not seasonable notes on the culture of the canna.

The foliage of the canna, especially when young, is very tender, and on that account requires care on first taking the plants out of doors. Late in May or early in June is about the best time to expose them outside.

Shading.—Plants will require careful shading and an increased supply of water as the heat of the sun increases. Water and syringe the plants early in the day. Close ventilators early in the afternoon. Give increased ventilation as required.

The Herbaceous Border.—About the end of April or early in May is the best time to attend to herbaceous plants in the flower garden. Any dividing or transplanting of

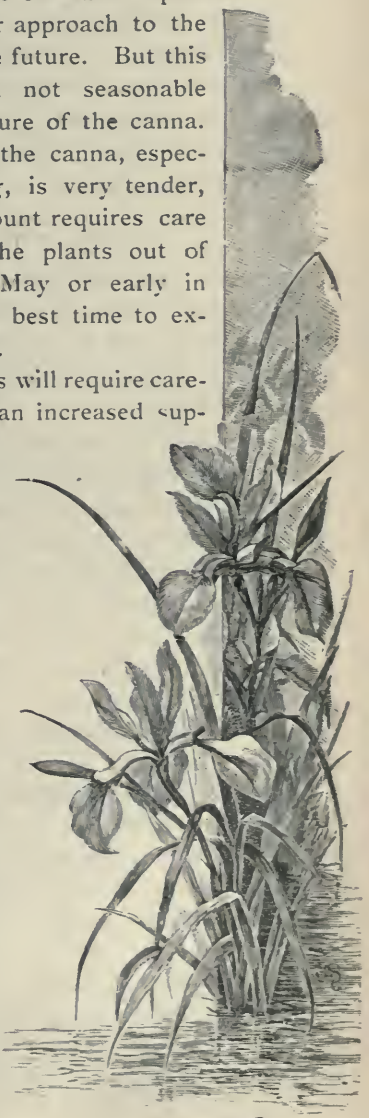


FIG. 2237. IRIS.

the early flowering perennials should be done as early as possible. The pretty little pink and white flowering phlox subulata, or moss phlox as it is sometimes called, should be divided and transplanted very early. A better time to do this, however, is early in September, so unless the growth has got very straggling this can be left over until early fall.

Both the herbaceous and tree pæonies should be transplanted early if done at all. Dielytras and clumps of German Iris should be divided early. All of the plants just mentioned will, however, grow and thrive and produce their flowers in abundance for three or four years, without being divided. After that period transplanting is beneficial, as larger flowers, higher colored and more luxuriant foliage can be obtained than by leaving them in dense matted clumps for too long a time.

Herbaceous spireas (Spirea auruncus and S. filipendula fl. plena) can also be transplanted early. About the first week in May will be early enough for most of the later flowering perennials. A good general rule to work on at this season of the year in regard to transplanting perennials is to divide and transplant them when the young growth is about an inch high. Exact dates for a week or so cannot be given as the best time for these operations, as situations and seasons vary so much, but about the end of April and early in May is about the right time in this section of Ontario.

Best Twelve Herbaceous Plants.—I am often asked what I consider are the best twelve varieties of herbaceous perennials. The following twelve species, many of which can be had in several varieties, will be found to be hardy, easy of culture, and will come into flower in succession from early spring until late autumn. Thls latter feature, viz., successive flowering period, I consider one of the main points to be thought of when planting a border, or even a few plants of herbaceous perennials. Hardiness, and an

FIG. 2288. PÆONY.

adaptability to grow readily in almost any soil, is another point that has been taken into consideration in making up this selection, as well as their suitability for cut flower purposes. They are given here in about the order that they will come into flower. I have also given the average height of the plants, a point lost sight of sometimes and one that causes dissatisfaction oftentimes later on.

1. Iberis sempervirens, 6 inches.
2. Dielytra spectabilis, 2 feet.
3. Iris Germanica, 18 inches (in variety.)
4. Herbaceous Paeony, 2 ft. (in variety.)
5. Gaillardia grandiflora, 18 inches.
6. Campanula persicefolia alba.
7. Aquilegia, 2 feet (in variety.)
8. Hemerocallis flara, 2 feet.
9. Phlox paniculata, 2 to 3 feet, (in variety.)
10. Pyrethrum hybrida, 18 inches.
11. Achillea, The Pearl, 2 feet.
12. Rudbeckia lanceolata, 5 feet.

This will be found to be a good list of twelve iron-clad border plants, many of

FIG. 2289. COREOPSIS.

which can be had in great variety, especially the iris, paeony, aquilegia and phlox. I would very much like to have added the delphinum, coreopsis, and one of the thalictrums and the beautiful little gypsophilla paniculata so useful for cut flowers, but I could not see my way clear to omit any of the foregoing list. The thalictrums are most useful for cutting for bouquet green, but succeed best in a shaded position, such as on the north side of a fence or building.

Hardy Roses.—These should be pruned as early as possible, if not already done. Prune closely, leaving from 4 to 6 inches of last years growth below where the shoots are pruned off. Any planting of these, or of hardy shrubs or trees should be done at once. Fork over the rose beds after pruning the bushes. A little fertilizer, such as bone meal, very rotten stable manure, forked in around rose bushes or flowering shrubs will help them materially.

Annuals.—These can be sown outside now. A small frame made of boards and placed in a warm position with a few inches of good soil will be a good place to sow most annuals in. They are easier cared for in the early stages of growth treated in this way than if sown in the open border. Mignonette and nasturtium, and perhaps stocks are best sown in pots or in the place they are to grow in, as they do not transplant very easily.

Hamilton. W. HUNT.

PLANT EXPOSURE.

All the windows of a house can be utilized for plant growing, provided we are careful in our selection and adapt the plants to the window it is to grow in.

If I were asked to give a list of plants adapted to the several exposures, the list would be something like this: For eastern windows—fuchsias, begonias, callas, Chinese primroses, primula obconica, azaleas, plumbago, stevias, lobelias, and all kinds of bulbous plans. For southern windows—geraniums, roses, chyrsanthemums, carnations, lantanas, oxalis, oleanders, abutilons, hibiscus, marguerites, and most of the plants having richly colored foliage. For western windows—bright leaved plants, and a few more 'accommodating' plants like the geranium, provided the effect of too strong sunshine is modified somewhat. For northern windows—ferns, araucarias, English ivies, palms, aspidistra, ficuses and seliganellas, Roman hyacinths, primula obconica and Chinese primroses will often bloom well in sunless windows.—*Amateur Florist.*

SOME ATTRACTIVE CACTI—III.

BY J. H. CALLANDER, WOODSTOCK.

FIG. 2290. CEREUS PERUVIANUS MONSTROSUS.

FROM the present appearances it would seem that Cacti are coming into more favor with the general flower-loving public. There is scarcely a floral magazine that is not running a series of articles on these wonderful plants, and this shows that the people are enquiring about the genus. There is a fascination in collecting anything that is hard to get, and every enthusiast tries to get something rarer than his neighbor has. This is the case with stamp and coin collectors, and it is the same with collectors of Cacti. There is this advantage that the "Cactus Crank" has, his specimens are always rewarding him with splendid bloom, and yearly growing in value. The field also is unlimited in extent, the known varieties running into the thousands, and abundance of room open for hybridizing and grafting to produce new varieties and effects. As these facts become known the Cactus becomes more popular, and that seems to be what is happening now.

In this article only a few sorts will be touched on. From March onward the Cacti begin to send out their flower buds, and new growth after their winter's rest, and those fortunate enough to possess some good ones will be watching the process with expectant interest.

In the first photo is shown a good picture of the Cereus Peruvianus monstrosus, described in the December Horticulturist. This fine plant was grown in London for a number of years before it came into possession of the present owner, and is a valuable

FIG. 2291. P. C. HOPPENSTEDTI.

FIG. 2292. MAM. NIVEA CRISTATA.

specimen. In a small photo is shown a specimen of Pilocereus Hoppenstedli, one of the Old Man style of Cacti. Some authorities class this family with the Cereus, but the characteristic hairy spines would seem to entitle them to their own distinctive name. They are found in mountainous parts of Mexico, and will stand long drought. A very porous soil, with a good deal of lime mixed in, seems to suit them well, and when making growth they enjoy plenty of water poured over them. Indeed a good scrubbing with soap and water is not only good for them but gives them a better appearance.

The third engraving shows an extremely rare and fine specimen of the Mamillaria family. It is M. nivea cristata, a cristated form of a pretty species called M. nivea. This plant is the finest of the kind the writer has ever seen, and was lately sold to Dean Innes, of London, whose fine collection it now ornaments. It was exhibited at the Pan American with McDonell's exhibit from Mexico, where it was admired and coveted by many Cacti collectors. The natural form of the plant is round, like a coxcomb in shape, and must have taken from 50 to 75 years to reach its present proportions.

These plants are very rarely found, and bring high prices, one very large specimen at the Pan American being held at $150. It was almost as large as a tub, but was not all cristate, most of it being the natural form of M. nivea, with three cristates in cluster. Dean Innes' plant, as a specimen of cristate form alone is much finer.

In our next Cacti talk we will try and show some good grafted Cacti.

Woodstock, Ont. J. H. CALLANDER.

HUMUS.

Soil well supplied with humus is in the best possible condition to generate these influences. Humus keeps the ground from becoming compact, makes it loose, allowing a free circulation of air. Then vegetable decomposition creates heat, and its spongy nature increases the capacity of soil for holding water. While plants need water and must have it, they will not thrive on too wet land. Good drainage adds very materially to the fertile condition of the soil because it aids decomposition of elements of plant food. It stimulates a deeper root growth, and in doing so it increases the supply drawn from the subsoil. Drainage, manuring, rotation and tillage are practices essential to the supply and maintenance of soil fertility.—*W. S. Tompkins before N. B. Farmers' Institute.*

The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

PERSONALS.

CONTRIBUTED BY THE SECRETARY, MR. G. C. CREELMAN.

MR. W. N. Hutt, of South End, attended orchard demonstration meetings at Collingwood, Creemore, Stayner and Thornbury during the third week of March. He reports great enthusiasm and much interest taken in the work. At each place an afternoon meeting was held in an orchard with a practical demonstration in pruning and grafting. Many farmers declared, after seeing Mr. Hutt demonstrate, that, had they known the principles of pruning themselves, it might have saved them thousands of dollars in their orchards. Such practical work as this by competent men should tend to do away with the transient tree pruners who, as a rule, know as much about orchard management as a blacksmith does about watch making.

At the meeting of the Orillia Horticultural Society Mr. Hutt made a special plea for nature study in the schools. He appealed to the parents, saying that the children are always interested in anything pertaining to the field or forest and, if they had teachers competent to guide them, there is hardly any limit to the knowledge they would gain, knowledge of a nature that would be a benefit to them in after years. "As a rule," said Mr. Hutt, "children know more about nature in regard to the habits of birds and

insects than their parents do, as they are more observant of such things and more interested in them.

Lawn Making.—Mr. Hutt, at one of the horticultural meetings recently attended, gave the following instructions in reference to the making of a good lawn :—

"In the making of a lawn the point of fundamental importance to be observed is the preparation of the soil. The ground should be graded to a perfect level, but the subsoil not brought to the surface. The ground should be cultivated thoroughly until all weeds have been killed. The seed should be sown very thickly and evenly, and the ground well rolled afterwards. The best seed for a lawn is a mixture of equal parts by weight of Kentucky Blue grass, Red Top and Dutch clover. This should be sown at the rate of fifty pounds to the acre if a fine velvety lawn is required. He would not recommend the buying of ready mixed seed, as it generally contains the seeds of many obnoxious weeds. The lawn should be allowed to grow the first year, so that the roots may gain strength and headway, and in the second year it should be cut as often as possible."

Mr. A. Gilchrist, of Toronto Junction, and Mrs. E. M. Torrance, of Chateauguay Basin, Que., were the delegates this year to the horticultural societies in the east.

Writing from Napanee, the secretary says: "This is probably the strongest and most efficient deputation that has yet visited Napanee. Many beautiful plants were shown at the meeting by the different members of the society. It is proposed that a plot in the town be secured and kept beautiful during the coming summer by the members of the society."

Dr. C. J. S. Bethune, London, the veteran entomologist, was persuaded this year to help with the lecture work in connection with the Horticultural societies, and of course he gave splendid satisfaction, and, as far as we have learned, every meeting attended by him was most successful. He was accompanied by Mrs. A. Gilchrist, of Toronto Junction, who is a practical florist and was able to answer all questions in reference to the growing of herbs, trees and shrubs.

At Woodstock **Mrs. E. M. Torrance** is reported as having captivated the audience. She advocated the growing of shrubs and perennials on all lawns, as in that way only a succession of bloom can be secured at a reasonable expense. Annuals should be used only to fill up and to supply an occasional dash of color. She spoke strongly against planting in rows, or splitting up a stretch of lawn with flower beds. Grouping is far more effective, and it is following nature's plan, which is the aim of gardeners now who have an eye to the beautiful. Among the shrubs that Mrs. Torrance mentioned as growing well in this climate were syringas, lilacs of all varieties, magnolia stellata (a shrub little known here, but which is easily grown and blooms very early), spireas, roses, rosa rugosa (which comes in a variety of shades), japonicas and others. In selecting shrubs it would be well to have some in which flowers are succeeded by berries, as in that way bits of color would be insured for a long time, often far into the winter. She also gave a list of well known perennials, such as the bleeding heart (which, by the way, may be grown in the house), the perennnial pea, rudbeckia, German iris, etc., which are free flowers and easily cultivated. These, as well as shrubs, should be grouped, not planted in rows.

QUESTION DRAWER.

Apple Aphis.

1278. Sir,—Enclosed please find cuttings from apple trees containing sample of insects on apple bark, also peach wood showing puncture of bark. Please give us information on these insects. The apple insect is a new discovery here. *a.* What injury does it do to the apple tree? *b.* What is the remedy, when applied? *c.* Formula for application? This information will be thankfully received. The appearance is like a flea, my glass shows it about as large. The indication of the bark would seem to be the eating into the cambium and following it round the limb. Your reply will very much favor, yours truly, W. C. Webster.

The minute, oval shining objects seen by Mr. Webster in the scars on his apple and pear twigs are the eggs of the green apple aphis, or louse. The lice hatch from the eggs about the same time the foliage appears and suck the juices from the leaves, causing them to curl. Frequently the tender tips of the shoots are killed, and the young fruit is so checked in its growth that it never ripens. The lice multiply rapidly, and often much harm is done; but if a thorough spraying is made immediately after they hatch from the eggs, i. e., as the buds are opening, very beneficial results will be gained. The standard applications are: 1. Whale-oil soap (1 lb. to 2 gallons of hot water); 2. Kerosene emulsion (1 part emulsion, 12 parts water); 3. Tobacco solution (1 lb. to 6 gallons of water); 4. Tobacco and whale-oil soap solution. Paris green applications are of no value.

The punctures on the pear trees are made by the tree-cricket, which does so much damage to raspberry canes.

The little clusters of eggs on the specimens sent belong to the Fall canker-worm.

Some of the scars on the twigs may have been caused by the Buffalo tree-hopper about which I wrote a few notes in last year's Canadian Horticulturist. The best treatment is to remove and burn all affected twigs during the pruning season, as the eggs will then be destroyed.

The Lime Washes.

1279. Sir,—I am somewhat puzzled about the best time for application of lime wash to trees, after comparing Mr. G. E. Fisher's statements in the February Horticulturist with what Professor Macoun has found so beneficial. Mr. Fisher, speaking of the lime and sulphur and salt preparation, advises that the first spraying be done in April, as late as possible before the opening of the buds; while Professor Macoun on page 57 of same number says—"The mixture (lime and salt) should be applied in the autumn or early winter." Now is there any material difference between the two spraying mixtures? Does the boiling with sulphur destroy the caustic properties of the lime? At the annual meeting our Association (P. E. I.) different members spoke of the successful application of lime wash in midwinter, as suggested by Professor Macoun, to retard blooming and destroy the oyster-shell bark louse. Has anyone used the spray of which Mr. Fisher speaks as a winter application? and why, if they are so nearly similar, does one doctor give his medicine in winter exclusively, while the other does his work in summer?

I value the Horticulturist very highly, and note steady improvement. I thank you for marking my copy "complimentary" last year though I had paid for it with my annual fee to our Provincial organization. We expect to accomplish something more than usual in our Association this year as we have efficient officers in Messrs. A. E. Burke and Dewar for President and Secretary. I fear that Diagram 2242 would not help Professor Hutt very much in his explanation of sap circulation; it was a puzzle to me until I noticed the roots were upwards. Yours truly,

Jeremiah S. Clark,

Bay Views, P. E. I., Feb. 22.

These mixtures are totally different. Prof. Macoun's was simply to retard the bloom in spring and may be applied in winter, while Mr. Fisher's is a fungicide and insecticide

both, and one which is best applied just before the buds open.

We regret the oversight in the case of the illustration.

San Jose Scale.

1280. SIR,—I want you to send me formulas and directions for spraying peach trees for the Curl and for the Perniciosus Aspidiotus.

JONATHAN MCCULLY, M. D.

Cedar Springs Ont.

1. Peach Leaf Curl has been, and is being treated, successfully by the use of Bordeaux Mixture. The spraying should be done early in the spring before the buds begin to swell, or from one to three weeks before blossoming. The success of the operation depends largely upon the time of application and the thoroughness with which the spraying is done. The twigs should be completely covered with a very fine mist, and this can be done only with a very fine nozzle. The tree must not be drenched. As soon as the mist droplets begin to run together, then is the time to stop spraying, and the trees have had enough.

2. Experience has shown that the San Jose Scale can be kept in check by careful applications of whale-oil soap, and Crude Petroleum. The soap can be used most effectively while the buds are swelling. The buds of tender trees are likely to be damaged if the application is made earlier. (For advice regarding the best brand, consult Mr. G. E. Fisher, San Jose Scale Inspector, Freeman Ont.) The soap should be used at the rate of two and one half pounds to a gallon of water, and one and one half gallons of the mixture are necessary for a full grown peach tree. It is preferable to prepare the mixture by adding the soap when the water is being heated over the fire, as the soap will come into solution much better. In the case of the crude petroleum, it is far safer to use the 20 to 25 per cent. diluted crude petroleum. (Consult Mr. Fisher as to the best petroleum to use.) Our Ontario petroleum Mr. Fisher has found excellent. Peach trees, however, which have been weakened from any cause, are liable to injury from its application. Mr. Fisher thinks that 15% dilution is quite strong enough on peach trees. Of necessity, this dilution must be applied with a combination emulsion pump. The whale-oil soap is not likely to do as much injury as crude petroleum when applied by careless or unskilled sprayers.

O. A. C. Guelph. PROF. LOCHHEAD.

Best Fertilizer.

1281. SIR,—Will you please answer through the Canadian Horticulturist which is the best kind of fertilizers for loamy soil and how many years they will stay in the ground—some kinds will stay three years—and oblige

A SUBSCRIBER.

It is impossible to say which is the best fertilizer for a loamy or any other kind of soil. Artificial fertilizers can be intelligently and economically applied only when the nature of the soil and the peculiar feeding power of the crop that is to be grown upon it are known. For instance, if a soil is rich in available potash, and the crop to be grown is not in need of much of that plant food, it is evident that potash would be applied at a loss. It would, I think, be best to find out by experiments with small plots which fertilizer gives the best results on your land before going extensively into the use of them.

The cheapest nitrogen for farmers or orchardists is obtained from the growth of leguminous crops, such as clover, peas, hairy vetch, etc., and, under most circumstances, wood ashes furnish the cheapest potash and phosphoric acid.

Chemical Dept., Yours truly,

O. A. C., Guelph. R. HARCOURT.

OUR AFFILIATED SOCIETIES.

FIG. 2293. COLEUS BED IN MR. GOODMAN'S GARDEN AT CAYUGA. (Photo by Sweatman).

Cayuga.—The last misson of our society is to strengthen the individual hands of the local members in the improvement and adornment of their homes, so that public opinion will approve of them when they fearlessly say with "Elizabeth in her German Garden," "I love my garden!"

At the present time it is, in small places like Cayuga, considered effeminate to be fond of flowers. One is met with a remark of this kind; "Oh yes it is very pretty, but we have no call for this sort of thing." The farmers about us prosper and thrive, but the little villager nods away a local existence on a put-off plan and stunts and dwarfs the deve opment of his intellectual vision with a self-possessed conceit that knows it all. Each year finds him in the same rut—a grocery politician fighting improvement, a makeshift regardless of all ordinary laws of sanitation, accustomed to fence a piece of the street when he likes, bound to throw his filth where he will, blind to duty, obstinate and dirty; full of a penury in public matters that tends to poverty of soul and pocket.

The growing distaste for country life is not because of the farm. Our country is full of noble, intelligent farmers; it arises in protest against the little villager.

Imagine then the consternation at the temerity of our society advocating public gardens, and securing them, too. the first season. We read of, look at and enjoy the public gardens of Toronto, Hamilton, Quebec and Montreal, but in the country where it should be the easiest place of all to have these things it never heard of. It was contrary to nature—no, not contrary to nature, but contrary to the nature of the little villager.

The farmer is brought up to work; the little villager is the product of perfect idleness.

A local society has a great and noble work. If its members are faithful, it is possible to materially change and improve many small places. Our society has found much help in the success of the many individual gardens in this season just past.

A. K. GOODMAN.

The second open meeting of the Cayuga Horticultural Society was a pronounced success in all of its features.

For recherche occasions like this the Court Room if possible is secured, and there is no prettier and statelier room within the county for a public gathering of a semi-social character such as this was.

By a very simple arrangement the tables of the Court Circle, the Clerk's and Judge's desks made a perfect little platform with a background of shelving rising tier on tier for the display of a profusion of plants and flowers that was truly a dream of beauty and loveliness.

Begonias from giant towering, gorgeous shrubs five feet high crowded with a very wealth of bloom down to the dainty two-branched little beauties carrying only a couple of balls of bloom These flowers were the most in evidence and occupied the highest and most prominent place in the floral terrace. These were flanked on either side by splendid palms, tall, sweeping graceful ones of the grounded type, and a magnificent specimen of the nicotine plant.

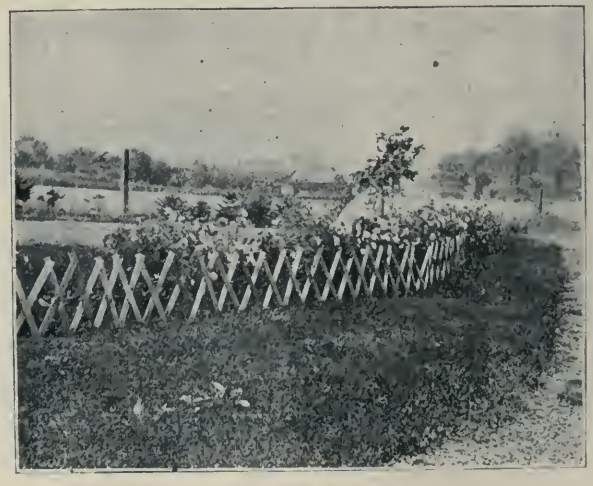

FIG 2294. ASTER HEDGE AT CAYUGA.

Just below this line on the next step was a magnificent miscellany of geraniums of all colors with great spikes of bloom. Petunias, sword palms, ferns, dianthus and coleus, the central portion being here occupied by a splendid easter lily. The base line was formed by a splendid array of primulas, Irish primroses and hyacinths. The effect of the whole was a spectacle not often seen. The most refined homes in the town were exploited for the material for the display and the contributors are to be congratulated on a result the memory and the impression of which will not soon be forgotten. The arrangement and the grouping and blending were dictated by an artistic sense that was given free scope.

No trouble was spared and a good deal of expense was gone to.

The finishing touches of this magnificent flower show were given by the addition of a coronal drapery of pink and white depending from the alcove of the portico behind the Judge's seat and surmounting the whole floral edifice, and the addition to the collection of flowers already described, of a gorgeous collection of a cineraria and cyclamen in full bloom and of every variety of shade. The piece de resistance was a small table gracefully draped, literally thronged with vases containing showy bouquets of carnations, tulips and narcissus. The apex of the drapery was crowned with a huge bnnch of American Beauty roses.

The audience for the evening entertainment began to gather early and at 8.15 there was not a seat left in the building from the floor to ceiling. At this hour Mr. Goodman opened the entertainment with a neat speach stating the aims and purposes of the Society for the year 1902.

The Cayuga orchestra of seven pieces were present and added to their already well established reputation as a musical organization. The programme was carried out in its entirety except the numbers of Mrs. and Mr. Renshaw from York whom the impassable roads prevented from attending. Miss Matthews from Toronto was heard for the first time in Cayuga in two songs every note of which was appreciated. This young lady possesses a very sweet, true and expressive voice. There is sympathy in every tone and she added much to the enjoyment of the evening.

Mr. Farmer of the Bank of Commerce contributed two numbers, both of which were enthusiastically encored. This, too, was Mr. Farmer's first public appearance in the town, and Cayuga people are hoping it will not be the last. Mr. Farmer is not new to the concert stage, having won golden opinions from the best teachers in Toronto and elsewhere. His rendition ot his two selections was indeed a treat to his audienee.

Prorfessor Macoun and Mr. Goodman supplied the addresses of the evening.

Walkerton.—The first public meeting of this society took place in the opera house on Thursday evening, March 13th. The Mayor of the town occupied the chair and the Walkerville orchestra provided delightful music. The speakers of the evening were Messrs. M. H. Race and L. Woolverton, of Grimsby. The former gave a most delightful and inspiring address on the influence of flowers upon the life and character, and the latter took up the subject of landscape art as applied to home and school grounds. The interest was intense from first to last and the society hopes to stir up the town to attend some special work along the lines of special improvement.

FIG. 2295. THE HIGH SCHOOL AT CAYUGA.

Brampton.—On Friday, the 7th of March, Mr. A. Gilchrist, of Toronto, and Mrs. Torrance, of Chatauqueay Basin, P. Q,, visited us, and at the same time the editor of our monthly journal, Mr. Woolverton. Visits were made in the afternoon to the high and public schools, and addresses given wlth a view of interesting the children in nature study. The evening attendance was small, because of negligence in advertising, and scarcely anyone seemed aware of the meeting. Mrs. Torrance talket about "Plants which were successfully grown in her garden"; Mr. L. Woolverton upon "Civic improvement as work for our horticultural societies"; and Mr. Gilchrist exhibited a chart showing how school grounds might be so improved as to afford spacious playground in the rear, and also a beautiful and artistic lawn in the front, with borders of trees, shrubs and flowers.

Toronto.—A Fine Flower Show. Quite a new plan of exhibitions has been adopted by the Toronto Horticultural Society. Instead of having one large annnal exhibition, there will in future be one held each month in St. George Hall of flowers, either house or outdoor, then in season. The object is to induce the public in general and amateurs in particular to take greater interest in the cultivation of plants, and it is thought more can be accomplished by monthly displays than by one big exhibition during the year.

Napanee.—A very large and successful public meeting, under the auspices of the Napanee Horticultural Society, was held here on Tuesday evening, 4th inst. It was one of the most successful and pleasant meetings yet held by the society. The speakers of the evening were Mr. A. Gilchrist, of Toronto Junction, and Mrs. Torrance, of Chautauguay Basin, near Montreal. They are both first class speakers and practical horticulturists, and their services have been engaged by the Fruit Growers' Association, in connection with the Ontario department of agriculture. They were probably the strongest and most efficient deputation that has yet visited Napanee in any such capacity. The chair was occupied by Mr. W. S. Herrington, K. C., vice-president, who made one of the most complete and practical chairman's addresses the society has ever had the privilege of hearing. It is well worth publishing verbatim.

At the conclusion of the addresses a vote of thanks was moved by T. Symington and seconded by J. Pollard. Rockwell's Glee Club were present and added much to the pleasure of the meeting by rendering several musical selections in their very efficient manner. A question drawer, and the practical answers it drew out, was also a very valuable feature of the meeting.

Another thing that added to the pleasure of the meeting was the fine exhibition of plants by some of the well known members of the society. Mrs. Wilkinson, the efficient president, gave a display of some very fine specimens of hyacinths. Mr. John Wilson and John Pollard also displayed some beautiful plants of their own cultivation.

The society, under its present efficient management, is said to be now one of the best in the province. Some of its leading members have proposed procuring a small plot central in the town and beautifying it. Such a movement would add much to our town's attractions, and, we doubt not, that some of our leading citizens would cheerfully give tangible encouragement to it. We have already heard it intimated that some would subscribe liberally for that purpose. Mr. Gilchrist, who has attended many similar meetings, publicly stated that he met here the most responsive audience he had anywhere met similar occasions.

Cobourg—A meeting of the directors of the Horticultural Society was held on Monday afternoon March 3rd. It was resolved to offer cash prizes amounting to $40 for excellence in flower gardening during the coming season, and Messrs Hayden and Denton and Mrs. Field were appointed a committee to arrange a prize list, and the conditions of competition. Mr. Hayden suggested that prizes be given for the best flower beds, window boxes, ferneries, earliest potatoes, etc., open to the town, and that there be special prizes awarded to the school children for sweet peas, bouquets, etc. The object of the Society is to encourage local improvement as much as possible. It was decided that the Spring distribution for 1902 shall consist of the following nsmed plants; to which each paid-up member will be entitled, viz:—One of Kelway's new hardy hybrid Delphiniums, one of Kelway's hardy perennial Gaillardias, one of Kelway's choice autumn perennial Phloxes. (The foregoing plants have been imported by the Horticultural Society directly from the renowned Royal Horticultural Gardens, established by Kelway & Sons at Langport, Somerset, England). One hybrid perpetual Rose, one one clematis Jackmanni Superba, one box of Carnations.

Leamington.—The directors met on the 15th of February and decided to offer the members Hubbardston, Jonathan and Bismarck apple trees; Monarch and Climax plums; Engold, Dewey and Chairs peach; and Spiraea, Hydrangea, Wiegelia and Honeysuckle shrubs.

OUR BOOK TABLE.

REPORTS.

REPORT OF INSPECTOR OF SAN JOSE SCALE, 1901, by George E. Fisher, Freeman. This report is a most interesting and valuable one, and every fruit grower who has reason to fear the invasion of his orchard by the scale should at once write the Department of Agriculture, Toronto, for a copy.

BOOKS.

CYCLOPEDIA OF AMERICAN HORTICULTURE.—Comprising suggestions for cultivation of horticultural plants, description of the species of fruits, vegetables, flowers and ornamental plants sold in the United States and Canada, together with geographical and biographical sketches, by L. H. Bailey, of Cornell University, illustrated with over two thousand engravings, 1902. 4 volumes at $5.00 a volume. Published by the MacMillan Co., 66 Fifth ave., New York City. A magnificent work and indispensable to the library of every progressive horticulturist. This fourth volume completes the work, which reflects great credit upon the editor and his co-laborers. No doubt it will be in world wide demand.

FUMIGATION METHODS, by W. S. Johnson. A practical treatise for farmers, fruit growers, nurserymen, gardeners, florists, millers, grain dealers, transportation companies, college and experiment station workers. Published by Orange Judd Co., 1902. Price. $1.

CATALOGUES.

CARNATIONS, Wholesale List, 1902. Also plant novelties and general floral stock. J. Gammage & Sons, London, Ont. STRAWBERRY PLANTS. T. C. Robinson, Owen Sound, Ont. Spring, 1902. F. R. PIERSON COMPANY, importers, growers and dealers in choice seeds, bulbs and plants, Tarrytown on Hudson, N. Y., 1902. J. H. GREGORY & SON, Marblehead, Mass, 1902. Catalogue of vegetable and flower seeds. A fine illustrated descriptive catalogue free to all. MAULE'S SILVER ANNIVERSARY SEED CATALOGUE, 1902, Philadelphia, Pa. FRUIT AND ORNAMENTAL TREES, Central Nurseries, A. G. Hull & Son, St. Catharines. CHOICE STRAWBERRY PLANTS, Chas. H. Snow, Cummings Bridge, Ontario. GRAPE VINES AND GENERAL NURSERY STOCK, Lewis Roesch, Fredonia, N. Y., 1902.

THE
CANADIAN HORTICULTURIST

Photo by Miss Brodie.

FIG. 2296. GRAVENSTEIN.

THE
CANADIAN HORTICULTURIST
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* * May * *

THE GRAVENSTEIN.

OF all the general purpose apples ripening in October, we know of none that can at all compare with the Gravenstein, an apple which is too little grown in the province of Ontario.

In the Annapolis valley of Nova Scotia this apple has been grown quite extensively for export, but delays in transportation to the seaboard and ill-ventilated steamship accommodation have resulted in considerable loss in the cargoes exported. This has led many of the Nova Scotia orchardists to cease planting this variety, and to prefer varieties which will endure more abuse in transit, as for example Ben Davis, Baldwin and Stark.

At a recent Fruit Institute meeting in Colborne, Mr. G. H. Vroom, of Middleton, N.S., was present, having been sent to attend our meetings by the Federal Government. Being asked if the Gravenstein was the most important commercial apple of Nova Scotia, he said : "No, that is not our most important commercial variety to-day, even in point of numbers of trees, and while other varieties are increasing in numbers, no new Gravensteins are being set out. The reason is that the Gravenstein is an early apple, and we want a keeper."

Now, our experience is in favor of planting this apple to a limited extent in the commercial orchards of Ontario, especially in sections where there is good connection with the export steamers, so that too much delay need not occur in transportation. Cold storage accommodation too is becoming year by year more nearly perfect, and will afford a sure means of safe carriage for such varieties as the Duchess, Alexander and Gravenstein.

Those who plant large orchards find great waste from dropping when all the varieties are winter fruit, and are all ready for harvesting at one time ; whereas by having a succession of varieties, e.g.—the Duchess in August, the Alexander in the early part of September, the Gravenstein about the middle, the Blenheim about the end, and the winter varieties to work upon during October and November, the work of an apple grower is more evenly distributed throughout the

season. Besides this he can keep up continuous shipments, which is often an important condition of success.

At Maplehurst we usually make up a carload of Astracan and Duchess in August for export in cold storage, and forward our Gravensteins about the middle of September, just as soon as they color, and just before beginning on our King apples.

Our Gravensteins have equalled any variety for profit, bringing the top price in the British market about the first of October.

The following is our description of this apple, as written for Fruits of Ontario :

Origin.—According to Hogg, the original tree grew in the garden of the Duke of Augustenburg, at the Castle of Grafenstein in Schleswic-Holstein in Germany, and was still standing about the year 1850. Leroy inclines to accept a statement by Hirschfelt, a German pomologist, who in 1788 wrote the first description of the apple, and stated that it was brought to Germany from Italy. The earliest trace of the apple we can find dates back to about 1760. It is now widely grown in Western Europe, and is a favorite everywhere.

Tree.—Much more vigorous in growth than ordinary varieties, and when in bloom remarkably beautiful with its extraordinary sized pure white blossoms ; hardy and productive.

Fruit.—Large to very large, the sample photographed was 3 inches long by 3¾ broad ; form oblate conical, somewhat one-sided and more or less pentagonal ; skin, greenish yellow to orange, beautifully striped and splashed with two shades of red ; stem, stout ½ inch in length, set in a deep narrow cavity ; calyx partially closed, wide long segments, set in a wide irregular, slightly russet basin.

Flesh.—White ; texture, crisp and very juicy ; flavor, rich, vinous and aromatic.

Season.—September to October.

Quality.—Dessert, very good ; cooking, first rate.

Value.—Home market, first-class ; foreign market, first-class.

Adaption.—General in the apple sections, especially on the borders of the great lakes.

In order to study this question of adaption more closely we have made enquiries of some of our leading fruit growers in various sections and have received the following replies :—

"For real quality there is nothing in all our list of fall apples that will surpass the Gravenstein. But it does not seem suited to all the varied conditions that we have even in this province. In its favorite conditions the tree is a strong, vigorous and upright grower and a good bearer of well developed and handsome fruit. But it does not find these conditions in our inland counties. It seems to require a somewhat humid atmosphere for its proper development, and while it does well along the shore of Lake Huron and on the Georgian Bay it produces too many gnarled and unshapely specimens to be considered a success in this or in any of our inland districts. I have watched it closely for eight years at the Western Fair, London, and the best specimens have invariably come from some of the districts bordering on our great lakes. It will never be a profitable apple for the inland farmer of Western Ontario, though I would not be without one tree of it." T. H. Race, Mitchell, Perth County, Ont.

"Gravenstein is in my judgment the best apple we have for fall use. High in flavor, large, fine color, tree a strong grower and very good bearer. Only for its liability to spotting with fungus it is as near perfection for its season as any we can hope for. With attention in cultivation and manuring and regular spraying in proper times this apple can be produced profitably for home use and foreign markets." Alex. McD. Allan, Goderich.

"Gravenstein is very little known in this locality, but I have seen very fine specimens at Collingwood, though it is not grown there only to a very limited extent. If there was a good market for it I have no doubt it would be grown and would succeed well in the Georgian Bay District." G. C. Caston, Craighurst.

"I have three trees of Gravenstein apples that have borne heavy crops of very fine fruit each alternate year, and always bring the best price in the market. I consider it one of the best varieties of September

apples for all purposes. The tree is a medium grower here and fairly healthy." W. H. Dempsey, Trenton.

"The Gravenstein has not been largely planted in this district, but what have been planted have succeeded quite satisfactorily. The tree is a vigorous, spreading grower, especially while young. I do not know of any Gravenstein trees that have been blighted or frozen or been scalded by the sun, although some here have been planted 30 years. The trees are good average bearers of very handsome fruit of excellent quality, but like many other varieties of fine apples, they are only fall or late fall apples, ripening generally before Christmas. Taken fully matured it is very delicious. For home market, or the North-West, it should prove profitable." R. L. Huggard, Whitby.

ON THE PREPARATION OF LIME, SULPHUR AND SALT SPRAY.

BY FRANK T. SHUTT, CHEMIST, DOMINION EXPERIMENTAL FARMS, OTTAWA.

THIS mixture has recently received considerable attention in the horticultural press and several formulae, with varying methods of preparation, have appeared. This has given rise to enquiries as to the best mode to adopt in making the spray. To answer these the more satisfactorily, we have within the past few weeks made a series of experiments using the quantities and methods of procedure advocated by the more important authorities, and as a result have obtained information on one or two points that may be of interest to orchardists.

1. **Proportions.**—Since the insecticidal and fungicidal properties of the spray appear to be due to sulphide of lime and not to free (uncombined) sulphur or lime, it is desirable on the grounds of economy and efficiency that the proportion of sulphur to lime should be such that after boiling there may be little or no free sulphur in the mixture. We find to ensure this that the quantity of lime should at least equal that of the sulphur. An excess of lime apparently does no harm; indeed, according to some authorities, it is necessary in order to give the spray the correct consistency, but too large an excess is certainly to be avoided as it will be apt to cause clogging of the nozzle. We have found the following proportion satisfactory:

Lime.....25 lbs.
Sulphur.....20 lbs.
Water.....60 gallons.

We also tried a formula with a large excess of lime and obtained a good result:

Lime.....35 lbs.
Sulphur.....15 lbs.
Water.....50 gallons.

2. **The Lime.**—The lime should be thoroughly slaked to avoid subsequent clogging of the nozzle. If part of the lime is added after the spraying mixture is made as directed in some recipes, **the proportion of lime to sulphur in the mixture as boiled should not be less than that indicated in the first formula given above.**

3. **The Boiling.**—It is essential that the boiling should be continued a sufficient length of time to allow all the sulphur to enter into combination. This, if accompanied by constant stirring, will be usually between 2 and 3 hours.

4. **The Salt.**—The addition of salt (usually at the rate of 15 lbs. to each of the foregoing formula) is recommended by all writers. This may be from its alleged action in increasing the adhesive qualities of the spray. It does not seem to affect its properties otherwise.

5. **Apply Hot.**—On cooling certain of the lime sulphides formed crystalize out. It is, therefore important, we consider, to make the application while the mixture is still hot.

NOTES AND COMMENTS.

APPLE SCAB.

PLATE III

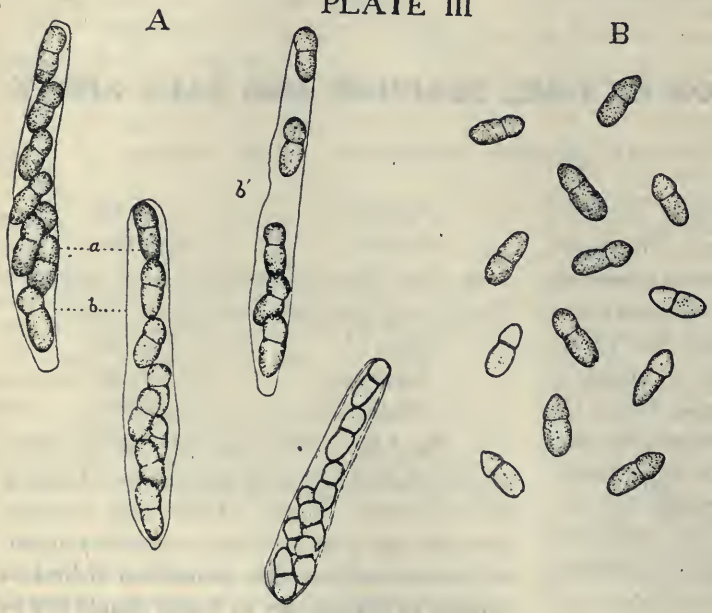


FIG. 2297.

A. Spores (*a*) in asci, (*b*) in ruptured ascus. *B*. Loose spores of scab.

Apple Scab (*Fusicladium dentriticum*) is one of the most serious hindrances of successful apple growing. By the fruit marks act, fruit so affected is virtually ruled out of the market as No. 1 grade, and in many orchards this will make seconds of nearly one half the crop. This fungus has been steadily increasing upon us, during the last twenty years, and we must now face it with faithful spraying or go out of apple growing. Green, of Ohio, made experiments in 1897 showing an average of nearly seven bushels of apples per treated tree and only two and one half per untreated; and in the case of Spy and Baldwins the actual average of profit derived from the treatment was more than $5.00 per tree!

The first application of the Bordeaux should be made soon after the leaves begin to unfold; the second when the petals fall; and, if weather is wet, a third should follow about two weeks later.

Clinton, of Illinois, found the scab was preserved over winter in the fallen leaves of the affected trees, and this stage of the life history of the scab is known by the name of *Venturia*. Fallen leaves gathered in October from scab infested trees, show, on the under side, small black round pustules, sometimes congregated in greyish spots, which mark the place of the winter scab colony. These pustules are called perethecia, which is the latin plural of perethecium. Figure 2298 C. shows one of these which has been placed fifteen hours in apple broth and the threads are the mycelial growth from the spores enclosed, which penetrate among the cells of the leaf tissue.

Figure 2298 D. shows some of these spores separated, (*a*) spore not yet swollen, (*b*) a germinating spore.

Figure 2298 E. shows germination of spores within 24 hours after placing them in water, (*a*) being a spore and (*b*) a germ thread.

Figure 2297 A. shows spores (*a*) asci, (*b*)

FIG. 2298.

C. Perethecium of apple scab with germinating spores.
D. (*a*) Spore not swollen, (*b*) Swollen germinating spore.
E. Germination of spores, after 15 hours in apple leaf broth. (*a*) spore, (*b*) a germ thread.

partially escaped from a ruptured ascos, and (*b*) loose spores.

When we consider how highly these drawings are magnified and that these spores are microscopic in size and float like particles of dust in the air, it is easy to understand the rapidity with which scab will spread throughout an orchard, especially in moist weather, for moisture is necessary to the growth of the penetrative threads of the spores.

So far, a coating of Bordeaux has been found the only safe-guard against these scab spores fastening themselves on the leaves and fruit, but this is an expensive as well as a disagreeable operation, and we are encouraged to hope that a coating of the lime, salt and sulphur spray may be equally effective, and certainly much less expensive, because one application may suffice.

The Cow Pea.—Formerly it was said that "this pea is to the South what red clover is to the North, and alfalfa to the West," but of late it has been found that the Cow Pea is of great value in all of these sections, and, during the last year or two, it has been sown in some parts of Ontario for the improvement of orchard land. It is sown in spring about the same time with beans, in drills about 2½ or 3 feet apart, and constantly cultivated until August 1st, when the peas will occupy the ground, though in some cases Crimson Clover is sown among the Cow Peas at the last cultivation. In

this way a large amount of vegetable matter is provided, which decays during the winter and permits of early spring plowing. Some orchardists turn in sheep or hogs in the fall to eat up the fallen fruit, along with the excellent pasture afforded by the Cow Peas, and find themselves well repaid with fat marketable live stock.

For sowing in drills, about 3 pecks of seed per acre is sufficient and it should be covered about two inches deep.

The Cow Pea, like other legumes, has the faculty of taking up the free nitrogen of the atmosphere, holding it fast and mingling it with the soil ; so that only the mineral elements, phosphoric acid or potash, need to be added to make a complete fertilizer for the soil.

The North Carolina State Horticultural Society has published a bulletin on the Cow Pea, to which we would refer any reader who is interested in studying further the question of its value for orchard land. We shall be much pleased to hear from any reader who has had any experience with this pea.

Where Doctors Disagree.—At the Fruit Growers' Institute, at Colborne, Mr. Coyle seemed to have some curious notions about grafted fruit. He said : "I have during twenty years' experience in the fruit trade, noticed this, that fruit from *grafted stock* will not carry such a long distance, will not stand as long in storage, will not give as good color, as that grown on the original stock."

Surely Mr. Coyle forgets that he has no apples in his orchard of the varieties he names, which were not *grafted*, either upon young seedlings by the nurseryman, or top grafted on old trees in the orchard.

No doubt the question of the best variety to use as stock is still an open one and worthy of most careful study ; and if it were possible for nurserymen to use Tallman Sweet Seedlings no doubt the results would be excellent. But the choice of scion is perhaps more important than that of stock, for in it we are propagating the individual characteristics of the tree from which it is cut, such as size, color, flavor, etc.; and this individuality in breeding is seldom if ever considered by the professional nurseryman in grafting seedlings. The orchardist should carefully consider it in top grafting, and choose his scions from those trees which bear the finest fruit and the most of it.

The Grape Vine may be easily grafted, and a knowledge of this may transform a profitless vineyard into one of great value. This work must be done early in the season before the buds begin to swell. The scion should be about six inches long, and is inserted very much in the same way as described for cleft-grafting the apple, except that the old vine is cut some three or four inches below the surface of the ground, and that no grafting wax is used. Instead, the cleft stock is tied with a string, and the earth is carefully heaped about the scion so as to leave but one bud above the surface.

In case the old vine is too knotty for cleft-grafting, the work may be accomplished by splice-grafting a smaller branch. This is done at a distance of two or three feet from the stump, and the grafted branch is then laid down and fastened in place with a peg. The earth is pressed about the scion, leaving a bud above the surface, which is the only one that should be allowed to grow.

Currant Anthracnose.—The loss of foliage by our currant bushes, early in the season, is becoming a serious hindrance to the successful cultivation of this fruit. For a long time we thought ourselves helpless to control this evil, but it is now shown that it may be largely prevented by spraying with poisoned Bordeaux mixture.

There are two distinct fungi to which this loss of currant foliage is due, viz.:—*leaf*

spot (*Septoria ribis*) which produces dead brown spots about one-eighth inch in diameter (Fig. 2300), and *anthracnose* (*Gleosporium ribis*) which produces spots only about the size of a pin head (Fig. 2299). The former is the common leaf spot disease, but occasionally, as 1901, we have serious attacks of anthracnose.

Hepworth, a fruit grower on the Hudson, estimates his loss on 18 acres of currants in 1901 as 24,000 quarts, due to anthracnose and subsequent sunscald, there being little foliage left after July 22nd to protect the fruit. Sprayed bushes at Geneva, on the other hand, held nearly full foliage until the middle of October. Fay and Victoria seem peculiarly liable to the disease, while Prince Albert and President Wilder are almost immune.

As a remedy we advise the use of poisoned Bordeaux instead of hellebore, thus destroying both worms and fungi with the same application. For thorough work one should give the first spraying before the leaves appear, and the second treatment when they unfold.

FIG. 2299 A LEAF OF RED CURRANT AFFECTED WITH ANTHRACNOSE.

FIG. 2300. A LEAF OF RED CURRANT AFFECTED WITH LEAF SPOT.

The Bordeaux is made after the usual formula, 4 lbs. lime, 4 lbs. of copper sulphate and 40 gallons of water; for the worms we add 3 oz. of Paris green to the 40 gallons of mixture.

The San Jose Scale Act was amended at the last session by adding the following subsections,—

(1) All persons owning, leasing or managing any orchard or collection of plants, other than a nursery, shall, when any plant therein becomes infested with the scale, and forthwith on becoming aware, whether by notice or otherwise, of such infestation, destroy such plant by fire, or shall effectually treat the scale by fumigation, or by spraying with crude petroleum, kerosene or soap, or by any other material prescribed by the Minister.

(2) The council of any city, town, township or incorporated village may, and upon

the petition of fifteen or more ratepayers shall, by by-law, appoint at least one inspector to enforce the provisions of this Act in the municipality, and fix the amount of remuneration, fees or charges he shall receive for the performance of his duties. All such appointments, as well as such remuneration, fees or charges shall be subject to, and be only operative on the written approval of the Minister, communicated by him to the clerk of the municipality.

(3) Every inspector appointed by any by-law passed under subsection 2 of this section is empowered to act as inspector under **the Yellows and Black Knot Act** and under **the Noxious Insects Act** in all respects as if he had been appointed an inspector under the last mentioned Acts by by-laws specially passed for that purpose.

(4) All such inspectors appointed shall be subject to and observe the regulations and directions of the Minister, and shall be subject and subordinate to the inspector appointed by the Minister, and in case of any neglect of duty, such inspector shall be subject to the penalties prescribed by this Act.

(5) The council of the city, town, township or incorporated village shall pay the remuneration, fees or charges of such inspectors, and shall be entitled to receive from the Department of Agriculture one-half of the amount so paid upon furnishing the department with statements of the sums so paid, certified to by the Inspector appointed by the Minister.

Inspectors are to be appointed in Saltfleet, Grimsby, St. Catharines and Grantham. At each of these places, after the Fruit Institute, a petition was got up and signed by fifteen fruit growers who were rate payers, petitioning the Municipal Council for the appointment of an inspector, who should enforce the provisions of the Act, and thus save the section from devastation by scale.

A Cold Storage Steamer has been promised the Prince Edward Island Association for carrying their fruits to the old country markets; also the Federal Government has promised to send an instructor in fruit culture, who will visit the whole province, and give advice and information on the most approved methods. The president, the Rev. Father Burke, writes a most encouraging letter, and hopes that the provincial organisations may work together so heartily as to attain the two important objects just now in view, viz., (1) the appointment of a Railway Commission, to whom we may appeal for justice in the freight rates for fruit; and (2) a more perfect system of transportation of tender fruits, both on land and sea.

The Fruit Marks Act, though not yet perfect, is on the whole working out the interests of the fruit grower. There is little encouragement for one man out of ten to put up his apples honestly, when the other nine face their packages and hide rubbish in the middle of them. The work of the inspectors is bringing every man into a uniform method, and will soon establish confidence in Canadian apples as the best packed and the best graded of those from any country, because Canada is the first to adopt such an Act. This will gradually cause the the value of our apples to advance in the foreign markets, and all our apple growers will share in the benefit.

It was a good provision that all closed packages of apples should be marked with the correct name of the variety, for this will obviate one of the evils, which unfortunately prevails in the large markets, of re-marking packages of fruit with the name of some popular variety. Many varieties of yellow fleshed peaches are sold as Crawfords; and many kinds of red apples are sold as Spys because they are known and wanted in the markets. In New York city, for example, the Western Ben Davis is often sold for New York state Northern Spy; and the Missouri Pippin for Vermont Spitzenburg. This, of course, is a fraud upon the buyer and tends to discredit the value of those excellent varieties, and in the end to bring general loss upon apple growers as well as disappointment upon the purchasers.

Grafting.—There are very many apple and pear orchards throughout Ontario which are unprofitable on account of the varieties planted. Many kinds also, once profitable, are so no longer on account of the apple scab, as, for instance, the Fameuse, the Early Harvest, and the Fall Pippin.

Now any man, who has a little skill in the use of tools, can easily transform such trees to kinds that are valuable by grafting; an art by many looked upon as difficult, and invested with many secrets.

The first thing to do is to secure scions of the kinds wanted; for these must be cut while the buds are yet dormant, and be laid away packed in earth, or in fresh sawdust, until needed. If near a good city market it will pay to grow a few such fancy apples as Red Astrachan, Duchess and Wealthy, and scions may be secured at a very small cost from almost any of the nurserymen who advertise in our columns.

Apples and pears may be grafted much later in the season than stone fruits, for while the latter may be done as early as possible in the Spring, the former need not be done until the last of May, or even the early part of June.

Cleft Grafting is the usual method, and for the smaller limbs it is the best. For this the tools required are a sharp saw for cutting off the limbs where the graft is to be inserted, a sharp knife to sharpen the scion, a

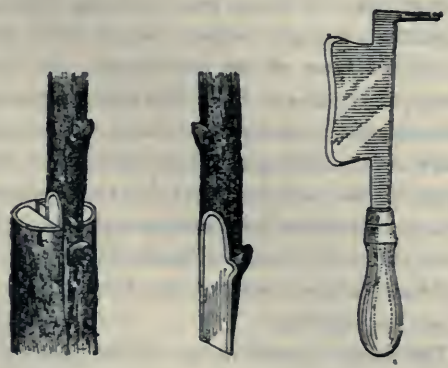


FIG. 2301.

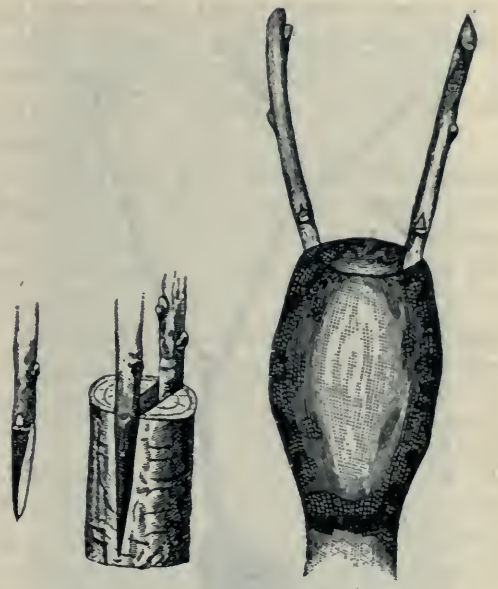


FIG. 2302. FIG. 2303.

grafting chisel, such as is shown in Fig. 2301, to open the cleft where it is to be inserted, a mallet to drive the chisel, and a small kettle, with a lamp so fixed in it as to warm the water in which the wax is placed till needed.

Our illustrations will represent the process of grafting. The scion, Fig. 2302, is bevelled equally on both sides, with the outer edge if anything a trifle thicker than the outer to ensure firm contact between the cambium layer of the scion and the stock. It is an advantage to have a bud on this edge as shown; if the stock is small one scion may do, as in the engraving; but if large it is better to have one on each side, and thus if one fails the other may succeed.

The stock should be smoothly cut across with the saw, and then split with the grafting chisel, the narrow projection on the back of which is used to open the cleft for the insertion of the graft. All the cuts are then covered with grafting wax and the work is complete.

Grafting Wax may be made in a variety of ways, but in all the ingredients are resin,

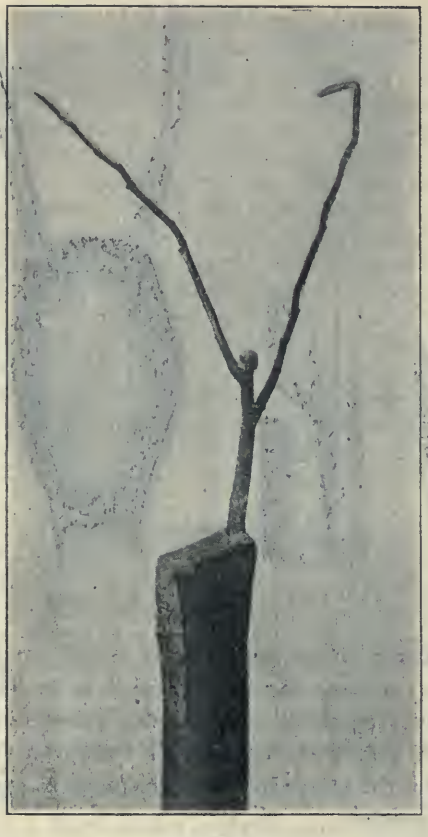


FIG. 2304. MR. MORRIS' APPLE GRAFT AS SHOWN AT COBOURG.

tallow or linseed oil and beeswax, and it is more or less expensive according to the proportion of beeswax used. A very good recipe is one pint of linseed oil, one pound of beeswax and four pounds of resin. The resin and the beeswax should first be melted together, and the tallow or oil be added, when the whole should be well stirred up together. The mixture is then poured into cold water, and when cooled worked by hand until ready for use.

Stringfellow Grape Planting.—True to his principles, Mr. Stringfellow advises that vines be reduced practically to cuttings just before planting; first pruning the tops down to almost one foot, then cutting away all side roots entirely, and those at the base to about a quarter of an inch. He would plant with a dibble, watering if the soil is very dry, and pressing the soil firmly with the foot.

Cheap Grades of Fruit should never be shipped; they should be sold at home for cider, canning or evaporating. It is all very well to say that the fruit grower should never grow second grade stuff. Theoretically he should not, and this is the aim of the best growers, but practically there must be second-class fruit when you practice sorting and grading: some samples will be curculio stung, some mis-shapen or otherwise blemished and cannot go in for No. 1 grade.

It would be the ideal thing if every farmer could have an evaporator on his own ground, but he cannot. It would not pay him to neglect his more important duties to try to work a business with which he is unacquainted. He had better sell all such stock to a well organized company, who understand the business and can afford to pay him a fair price. We have a number of such companies in Ontario and Mr. George Rilett, who has been buying largely for one of these fruit packing companies, surprised us the other day with some figures:

The Simcoe Packing Company, he said, has branches at Simcoe, Hamilton and St. Catharines. I have been buying for the Hamilton Branch alone, and I will give you some idea of my purchases. In 1901 I bought for them from fourteen to twenty carloads for evaporating, about seven carloads about Collingwood at about one cent a pound, all varieties; besides two carloads of fancy varieties for canning and for jams. I put about six hundred bushels in a car.

What do you consider the best variety of plums for canning?

The Reine Claude is one of the best for all purposes. In 1899 when there was a heavy

plum crop, I bought two carloads of this variety at Winona, and paid from 30 to 35 cents a twelve quart basket for them.

Do you buy cider apples?

"Yes, indeed I do; but not for the Simcoe factory. I buy them for S. Allen, of Norwich, who makes a special business of cider making. This man started business as a poor boy. He got a small cider press and set it up in his woodshed, and kept at the business till he mastered it, and now he has the best outfit in the country and has made a fortune out of the business. He is known the country over, and sends his travelers as far west as Winnipeg to sell his cider."

Does he get apples enough in Norwich?

"Oh no, he buys everywhere. Some years he almost sweeps the country for cider apples. In 1901 I bought about fifty carloads for him at 20 cents a bushel. Of course that was exceptionally high, but he always pays a fair price. Some years I buy one hundred carloads for him, and I get most of them in the northern sections, along the east coast of Lake Huron and south of the Georgian Bay, especially about Collingwood and Owen Sound."

A Visit to the Hamilton Factory.—Calling at the works of the Hamilton branch of the Simcoe Canning Co., one day in April, we were courteously received by Mr. Moffat, the manager, who was pleased to give any information of value to fruit growers. "I would be sorry, however," he said, "to have you fruit growers run away with the idea that this business could be successfully run by a company of farmers. It is a special business and needs experts to manage it or it would result in financial failure. We do a large business; in 1899 we put up 40,000 bushels of tomatoes, and paid about 25 cents a bushel for them."

Please give me some idea of the prices you pay for fruits.

"Well, we buy in twelve quart baskets, and for red currants we pay 25 to 30 cents, sometimes 35 cents; black currants 70 cents; red cherries 75 and 85 cents; ox heart cherries $1.00; gooseberries 60 cents; Keiffer pears 25 to 30 cents."

Do you like Keiffer as well as any for canning?

"Yes, it is as good as any for this purpose. We let them stand until they yellow up a bit, and we can take our time in handling them. We add a little sugar and they can splendidly.

We use Bartlett and Flemish Beauty also, but do not care for any pears less in size than two inches in diameter."

Plums for Profit.—Mr. Vance Cline, of Winona, is one of our principal plum growers; he has a very large commercial orchard near Winona, a part of which has been in full bearing for many years and a part is just beginning to be profitable. We took the occasion of his recent call at our office to ask him which plum he found most satisfactory for the profit. "The Bradshaw," he said, "it is excellent in quality, early, productive and carries fairly well."

How about Washington?

"Well, it is a plum to eat, but it does not carry. I have a good lot of trees, but I am digging them out on that account. No matter how careful you are in packing them they will open up spotted when they reach the market. Once I tried wrapping each plum separately, and shipping them in fancy packages, but they opened out spotted just the same, and do not sell well.

Do you like General Hand?

"Well enough, if I can get it, but the trouble is I cannot get the fruit. It does not bear well, and hence is unprofitable."

Is Pond's Seedling profitable?

"No, it is beautiful in appearance, but like the Keiffer pear it has no quality, and nobody wants a second basket.

Quackenbos is all right and so is Reine Claude. Both of these are profitable varieties. I think the French prune too would

be profitable ; it is such a good shipper and evaporates so easily."

Why don't you top graft your General Hand and Washington to some other variety ?

"Well, they don't do well in my experience. I have a lot of Lombard trees which I top grafted to Reine Claude and Bradshaw, but after a few years the grafts died off, and we have still an orchard of Lombards. I think I will dig those trees out and plant the orchard all over again."

What is your prospect for this season ?

"Oh, too good, I am afraid, for the price. I expect there will be a heavy crop all through the plum sections. Still, even at the low prices of the past two years, they pay very well ; and perhaps the Canadian Northwest will soon open up excellent plum markets for us."

The Transportation of fruit at reasonable rates is a burning topic with fruit growers and fruit shippers everywhere. The time was when this business of fruit growing was too insignificant to command either special cars or special rates, and it is no wonder the rates were exorbitant. But now all is changed, and the fruit products are becoming more important in Southern Ontario than the grain products. Why then should not as reasonable rates be made for the carriage of fruit as for grain ?

At our meeting at Cobourg, a report was brought in by Mr. W. H. Bunting, chairman of the Transportation Committee, which was very much to the point, and although the report was superseded by a resolution looking toward the appointment of a railway commission, the report of the committee should not be lost sight of as expressing some of the points of grievance which we fruit growers have against the carrying companies. The following is the resolution :—

Local and Provincial Distribution.—Resolved —1. That a revised schedule of reductions in rates and improvements in service be laid before the railway officials for their consideration, with a strong request for their acceptance, in order that at least to some extent justice may be done to the fruit industry.

2. That, inasmuch as improved systems of refrigeration and ventilation, in connection with the carriage of fruits, have been favorably reported on from the tests already made, and since the car service in this respect has not been satisfactory in the past, the railway company be requested to arrange for a more extensive equipment in this respect on some plan that may show reasonable prospect of success.

3. That matters of local grievances or hardships in connection with the transportation of fruits be promptly reported to the secretary of this association, with full details, in order that complete information on this point may be obtained and efforts put forth to relieve the same if possible.

4. That some comprehensive plan be adopted whereby the local conditions of over supply or scarcity of fruit in any particular district may be promptly made known, so that a more even and satisfactory distribution of the more perishable fruits may be obtained.

Export Trade.—Your committee note with satisfaction that improvements in the service are being made by the steamship companies, and, while they regret to learn that the financial results from export shipments have not yet been of such a nature as to inspire confidence in the shipper, they trust that the time may not be far distant when it will be possible to land our apples and pears in the English market in uniformly good order and with a reasonable assurance of a safe and careful handling throughout the entire journey. To this end it is hoped that the Dominion and Provincial Governments will continue to supplement the valuable assistance already rendered in this respect, which has been productive of good results.

We solicit the co-operation of local and provincial Fruit Growers Associations in securing for fruit growers fair play in the matter of freight rates on fruits, so that we may be agreed upon details when we again seek for a better classification of freights on fruits.

Civic Improvement is certainly one of the most important fields of work for our local Horticultural Societies, and the noble example of the Cayuga Society might well be followed by every other such society in Ontario. The plan of work laid out by the American League of Civic Improvement includes the following suggestive sections,—public recreation, a gymnasia, play grounds, etc ; parks ; municipal art ; village improvement ; rural improvement, including good roads, country schools, etc. ; sanitation ; libraries and museums ; social settlements ; public nuisances, as smoke, advertising, etc. ; preservation of nature ; arts and crafts, etc.

The openings for such philanthropic work are many and great, the fire of public spirit is spreading, it has caught the city of Hamilton, where our society is working enthusiastically along the lines of Civic Improvement, and interesting the school children in helping to carry out some of their plans, and we hope other cities and towns will make up in like manner.

The Barberry Shrub. This is a beautiful ornamental shrub which has so long held a prominent place among ornamental shrubs, has been tried, convicted and condemmed. The students of Mycology (fungus plant life) have discovered that this beautiful shrub is the host plant upon which the wheat rust fungus spends the winter, and from whence sends forth broadcast the summer spores for the spread of the wheat rust. This may not be an evil in sections of southern Ontario, where wheat is no longer a principal agricultural crop, but in those parts where it is still grown, the barberry shrub is a nuisance, and must be destroyed.

The following are the important sections of the Act relating to the shrub, recently passed by the Ontario Legislature.

1. No person shall plant, cultivate or sell the shrub known as the barberry shrub, and every person guilty of the violation of this section shall be liable, on summary conviction thereof before a justice of the peace, to a penalty not exceeding $10.00, besides the costs of conviction, to be recovered as provided by the Ontario Summary Convictions Act.

4. Where prior to the passing of this Act any has planted or has growing upon lands owned or occupied by him and situate within any city, town or incorporated village any hedge or fence formed by the said shrub or any plants of the said shrub, the Minister of Agriculture may, upon a petition signed by at least three owners or occupants of lands in an adjoining rural municipality, and after the report of one or more qualified persons appointed by the Minister for such purpose, require the person owning or occupying the said lands to remove and destroy such hedges, fences, or plant, and upon his neglect or refusal to do so within one month after service of notice in writing regarding such removal and destruction, the Minister may cause the same to be removed and destroyed.

5. Provides for Compensation ; and

6. Defines the variety as Berberis Vulgaris L.

Unfortunately for landscape gardeners, the beautiful purple leaved Barberry is a variety of vulgaris, and is included under this Act as an enemy to wheat growers, and therefore doomed to destruction.

THE ALPHABET OF SUCCESS.

Attend carefully to details.
Be prompt in all things.
Consider well, then decide positively.
Dare to do right, fear to do wrong.
Endure trials patiently.
Fight life's battles bravely.
Go not into the society of the vicious.
Hold integrity sacred,
Injure not another's reputation.
Join hands only with the virtuous.
Keep your mind free from evil thoughts.
Lie not for any consideration.
Make few special acquaintances.
Never try to appear what you are not.
Observe good manners.
Pay your debts promptly.
Question not the veracity of a friend.
Respect the counsel of your parents.
Sacrifice money rather than principle.
Touch not, taste not, handle not intoxicating drinks.
Use your leisure for improvement.
Venture not upon the threshold of wrong.
Watch carefully over your passions.
Extend to everyone a kindly greeting.
Yield not to discouragement.
Zealously labor for the right, and success is certain.

MEN WHO HAVE SUCCEEDED—II.

THOS. MEEHAN, PHILADELPHIA.

A Remarkable Career—How He Rose from Small Things to Great—An Example to Young Canadians.

FIG. 2305. THOMAS MEEHAN.

IN part owing to his most valuable labors in connection with that well known journal, Meehan's Monthly, and in part owing to his great success as a nurseryman, the name of Thomas Meehan has become a household word among the fruit growers of America. Success in life does not seem to depend so much upon outward condition, or even upon college training, as upon that inherent faculty which some men have of taking advantage of opportunities which lie along their pathway, and turning them into gold, or into position.

On Tuesday, the 19th of November, this noted botanist and nurseryman passed away, aged seventy-five years, mourned by a large circle of personal friends and associates in scientific pursuits.

We are only able, in our limited space, to give a most condensed account of Professor Meehan's life and labors, as a source of inspiration to young Canadians, who may thereby be led to seek the realization of some praiseworthy ambition.

Early Life.—He was born near London, England, in 1826, and soon after this date his father became head gardener upon a large estate in the Isle of Wight. "Here, in the backwoods of Squire Young's Scotch fir plantation, young Thomas Meehan used to love to sit on the brown pine-needles and alarm suddenly the young snakes till they scampered into their mother's mouth for protection. With no other boys to play with for miles around, he spent his time in writing boyish essays on what he saw. In after years, one essay of an eight-year-old boy got

into print, and brought on him a burlesque by Dr. Lindley, the eminent horticulturist and botanist, of England, in an early number of the Gardeners' Chronicle, of London—a cut with Meehan's viper still further evolutionized till its tail had become sagittate, so that it could spear a mouse and pass it to its mouth without moving itself. Professor Brown Goode, of the Smithsonian Institution, took up the question and proved by overwhelming evidence that the eight-year-old boy was right. A cut of the "Meehan viper," as it originally appeared in the Gardeners' Chronicle, December 16, 1848, is herewith reproduced."

FIG. 2306.
MEEHAN'S VIPER.

It was not that his father and mother did not appreciate the value of an education but because the schools were not at hand, that his education was neglected, except for such rudiments as his mother could find time to give him, until the age of ten, when he was given two years at a Lancastrian school, after which he went into regular work in gardening under his father's training. But success was in him, and circumstances could not bar it. He determined to know, and spent his evenings in the study of botany and horticultural books and literature, thus early evidencing that habit which in later life brought him, with only two years of school life, the well earned reputation of scholarship in specific lines, superior to that of hundreds whose names are adorned with B.A,, Ph.D., M.A., or other titles.

Aptly in connection with his life have the following lines by Lowell been quoted :—

No man is born into the world, whose work
Is not born with him—there is always work,
And tools to work withal, for those who will
And blessed are the horny hands of toil.
The busy world shoves angrily aside
The man who stands with arms akimbo set,
Until occasion tells him what to do—
And he who waits to have his task marked out
Shall die and leave his errand unfulfilled.

At twelve years of age he began contributing articles of scientific value to the public press, and thereby was brought to the notice of the members of the Royal Wernerian Society, and made a member while still a mere lad of about fifteen ! While still in his teens, young Thomas formed an excellent plan for the continuation of his studies ; he associated together a band of young men who met at nights to take up languages, mathematics, chemistry and studies, the one most advanced in a study always taking the lead of the others,—a scheme of work afterward developed into our well known Mechanics' Institutes.

Positions of Trust.—His first position was that of Head Gardener to Paymaster Vaux, and during the next five years he filled several engagements, each one giving him valuable opportunities for gaining a knowledge of details of horticulture. This was especially true of his engagement at Kew Gardens, where he had charge of houses containing plants from all parts of the world. These opportunities he made the most of ; for example, at Kew he made a catalogue of 1600 varieties, studying up the history of each. At the same time he continued to contribute to the public press, and thus made the most of every opportunity for advancement.

Through a friend he was induced at the age of twenty-two to come to America, where his first engagement was with Robert Buist, as superintendent of nurseries ; afterward he filled several positions of trust, as, for example, that of manager of Bartram's gardens, and in 1852 that of Cope's

FIG. 2307. THOMAS MEEHAN'S OFFICE.

grounds and conservatories; during which time also his pen was always busy.

Meehan's Nurseries.—In the spring of 1854 Mr. Thomas Meehan decided upon a bold and independent stroke, and, with the seeds he had collected from time to time and $1000 of his savings as his capital, he rented ground in upper Germantown, and established what are now so widely known as Meehan's Nurseries. Here was got together the first collection of the beautiful native trees and shrubs of America, which soon required much additional land, until in time some seventy-five acres was completely covered with nursery stock.

His title of Professor came to him on his being appointed State Botanist, and Lecturer at the University of Illinois.

Travels.—Thomas Meehan travelled much, including trips to Canada, Alaska, the far West, and in all these his one thought seemed to be the study of his favorite science. His mastery of details was well proven by his ready acquaintance with plants. From every land "Plants, specimens, twigs, leaves or flowers," it is said, "were almost daily received at his office for identification, and it was a cause for wonderment to those about him to see him, usually without hesitation, write off the names and possibly add some remarks about their history."

Writings.—He was a prolific writer, and among his productions we may just mention "The American Handbook of Ornamental Trees"; frequent contributions to the "Horticulturist" (American) on Landscape Gardening; the editing of the Gardener's Monthly; agricultural editorials of Forney's Weekly Press; important papers before the A. A. A. S.; Native Flowers and Ferns of the U. S.; many of the articles in Meehan's Monthly, etc., etc.

Public Service.—To his lasting credit, let us chronicle of Mr. Thomas Meehan, his public and philanthropic spirit. Neither business affairs, nor literary work, was allowed to interfere with his interest in the public schools and public parks. In the interest of the first of these, he was instrumental in securing $2,000,000 for new school buildings, and, in the second, his influence led to the organization of the City Park Association, and the laying out of some twenty-eight small parks, as public resting places, in various parts of the town. Among the honors conferred on Prof. Meehan, and well deserved, was the Veitch medal presented for "distinguished services in Botany and Horticulture" and this is all the more noteworthy becanse he was only the third American to be so honored.

Our young Canadian readers should study the face of one whose career has been so remarkable for achieving great results with fair opportunities, and therefore we have secured from Mr. S. M. Meehan, the son who now edits Meehan's Monthly, a good cut of his respected father. He sent in addition, a cut of the old office, adding that "the office shown in the picture has been in use, though added to, from the commencement of father's business in 1854; and nothing can be much more strongly connected with his daily life, for he went there every morning almost as regularly as he ate his meals,—right up to the time of his last sickness."

Use of Cover Crops and Fertilizers.—Prof. I. P. Roberts, of Cornell University, says: "Cover crops may, in a measure, take the place of fertilizers and manures. They are not, however, a universal panacea for all soil deficiencies, neither are they a full substitute in all cases for fertilizers. There is always a wide field for the profitable use of one or all of the concentrated forms of fertilizers named, and in many cases there is also a special place for the use of fertilizers, therefore the more need of honest goods. Commercial fertilizers furnish available plant food, but no humus. The cover crop furnishes both, but it is only fair to say that the plant foods in the former are more available than in the latter. Cover crops improve the physical condition of the soil, lessening the cost of tillage. Physically, fertilizers benefit the soil little or none. The humus furnished by the cover crops increases the availability of the plant food already in the soil; fertilizers do not. Cover crops shade the land and conserve moisture.

"It is impossible to accurately compare the cost of fertilizers with the cost of seeds for the cover crops and the preparation of the soil for them. The cost of increasing productivity by extra tillage, by the use of fertilizers, by cover crops or by all three means, can only be determined in each case by the farmer interested. I give below a single illustration of what a cover crop contains, knowing that another cover crop, under other conditions, might either be more or less valuable. Second growth of clover, furnished in roots and tops per acre, the following: Nitrogen, 138.86 lbs.; phosphoric acid, 87.85 lbs.; potash, 109.90 lbs. There is removed by 25 bush. wheat and accompanying straw, nitrogen, 43 lbs.; phosphoric acid, 20 lbs.; and potash, 27 lbs. It is believed that most of the nitrogen taken up by legumes is secured from the uncombined nitrogen in the atmosphere. The clover did not add to either the stores of phosphoric acid or potash. The plant took them from the soil and made them available."

OUR FRUIT INSTITUTES.

FROM Mr. Creelman's report of these meetings it will be seen that a new and most effective line of operation has been undertaken by our Association, bringing a fruit expert in close contact with the fruit men in every section, and coupling practical demonstrations with verbal instructions.

Mr. Hutt's addresses stirred up much discussion, and led to a considerable improvement on the crude methods of pruning commonly followed. About the middle of April, Mr. George E. Fisher, Provincial inspector of San Jose Scale, conducted three of these meetings in Lincoln County, in the orchards of A. H. Pettit, Grimsby; Chas. Purdy, St. Catharines; and J. J. Cook, St. Davids. The Demonstration Meeting in the orchard occupied about two hours, from 2.30 to 4.30, at which several spraying mixtures were made and applied; and in the evening an address, giving details and formulæ, was given by Mr. Fisher, who answered a great number of questions to everybody's satisfaction.

THE SPRAYING MIXTURES.

Crude Petroleum was first applied at each place with a combination pump, in the proportion of twenty-five per cent. of the oil to seventy-five per cent. water. This is the most effective spray known against scale insects, is most simple of application, and it may be applied in the finest spray imaginable. It is also a remedy for aphis on the cherry tree, which hatch out just before the leaf buds open. Every inch of wood should be covered in treating for scale, and the work should be done before the buds open. The cost is about $5.00 a barrel delivered in the Niagara District.

Fish Oil Emulsion.—While the crude petroleum was being applied to the experimental rows of trees, Mr. Fisher prepared this emulsion, with full explanations. This he said is a combination of oil and potash without saponification, which is therefore more effective than any soap, and easier prepared. For ten gallons of this mixture the following is the formula: 5 quarts of fish oil, 5 pints boiling water, 1½ pounds whale oil soap (or even of ordinary soft soap). Churn five minutes, add 2½ pounds caustic potash, and enough water to make ten gallons. It is expected this will prove more effective than whale oil soap and is less expensive, ten gallons costing only about sixty cents, compared with $1.00 for the soap. This is an excellent remedy for cherry aphis, applied just before opening of the buds, also for plum pockets, peach curl, in fact a general substitute for whale oil soap.

Lime, Sulphur and Salt.—While the fish oil emulsion was being applied to the trees, Mr. Fisher proceeded to make the lime, sulphur and salt solution. The formula was, lime 35 pounds, sulphur 15 pounds, salt 10 pounds. Boil two hours, and apply hot. The lime was slacked first, covering it three or four inches deep with hot water. This is applied once, just before foliage opens. The trees treated were first a golden color and then a golden white, every portion from the ground up being treated.

Kedzie Mixture. — This is a mixture of white arsenic, and is more effective than paris green, because the great demand for the latter has caused much adulteration. The formula is, 2 pounds white arsenic, 4 pounds of sal soda. Boil in two gallons of water for fifteen minutes. This will make two and a half gallons of the stock solution.

Use one pint in forty gallons of water, adding two pounds fresh slacked lime. This is excellent for all insects that eat the foliage, such as the canker worm, tent caterpillar, etc. It is also useful in killing curculio and codling moth. It may be used in the Bordeaux mixture.

QUESTIONS ANSWERED BY MR. G. E. FISHER.

Is Gillett's lye a good spray?

It is useful in cleansing the bark of trees, but it is soda, not potash, and I think the latter more useful. Mr. D. J. MacKinnon said he had used Gillett's lye to counteract the evil effects of an over dose of crude petroleum on his cherry trees, and had thereby saved his trees.

What is the cost of potash and fish oil?

Potash costs from seven to eight cents a pound and fish oil thirty-five cents a gallon.

Do you advise applying crude petroleum without dilution with water?

No, I do not. It is much safer to apply it diluted. Crude petroleum should not be applied to peach trees at all ; they are quite susceptible to injury from it.

Would crude petroleum destroy the eggs of the Canker worm as well as cherry aphis?

I am inclined to think it would if applied just before their hatching season.

Where does the aphis winter?

The eggs remain in the bark near the buds all winter, and hatch out just before the buds open, so the young are waiting there to feed upon the leaves. Mr. Emory of Burlington, used whale oil soap, two pounds to a gallon of water, and thoroughly cleaned out the aphis with that spray.

Mr. L. Woolverton said he had used a very fine kerosene spray, with an atomizer to his rose bushes for destruction of green aphis without injury to the young foliage, and he proposed to try undiluded crude petroleum for cherry aphis, put on with a very fine nozzle.

Mr. W. H. Bunting had used diluted crude petroleum for scale and found that he could keep it under control by this spray.

Is not the Lime, Salt and Sulphur wash more expensive than Bordeaux?

No, the one application costs about one cent a gallon, possibly a little more than one application of the Bordeaux, but you see you only apply it once, coating the tree before the foliage comes out.

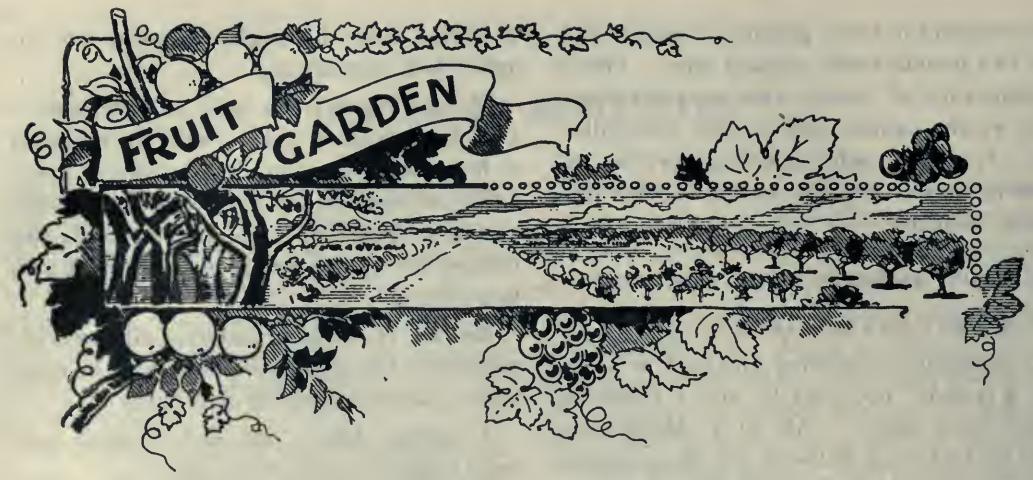
At Mr. Pettit's, we noticed that the ten gallons mixed covered ten medium sized pear trees, so in that case, the mixture costs only one cent a tree. The men were about five minutes at each tree.

Two hours is surely a long time to wait for the mixture to cook?

Well, if you have much spraying you need something bigger than a kettle. You need two large boiling pans, and let one pan full boil while you apply the other, and in this way you can keep the pump moving.

Does peach curl winter on the trees?

I have no hesitation in saying that it does, and I think apple scab does also ; hence cleaning the tree bark may rid use of both scab and peach curl.



OBSERVATIONS ON BUDS.*

BY PROF. H. L. HUTT, B. S. A., O. A. C., GUELPH, ONT.

BUDS afford a very interesting subject for study, because they represent the possibilities of the tree, not only in the growth of leaves and branches but also in the production of flowers and fruit.

Their Systematic Arrangement.

First, let us notice where the buds appear upon the stem or branch. At the end of the branch will always be found a well-developed prominent bud, known as the *terminal bud*. Upon this rests the responsibility of extending the growth of the branch. Along the sides of the branch are numerous *lateral buds*, which share the varied responsibility of producing leaves or branches or fruit.

If a growing shoot be examined in the summer, when out in leaf, it will be noticed that each bud is situated in the axil of a leaf; or, if it be examined in the winter, the scar left by the fallen leaf may be seen under the bud. Such buds are known as *axillary buds*, because they are formed in the axil of a leaf. If the branch is from an elm or basswood, or any of the ordinary fruit trees, the buds will be found to be alternately arranged along its sides. But if the branch is from an ash or maple, or lilac, it will be seen that they are arranged in pairs opposite each other. The buds, therefore, naturally have a regular order of arrangement, which varies in different kinds of trees.

Accidental Buds.

Sometimes buds are formed which do not arise from axil of a leaf. Such buds are usually the result of some injury to the part where they appear, and are known as *accidental* or *adventitious buds*. The suckers, or water sprouts, that make their appearance on large limbs where pruning has been done, usually arise from buds so formed.

Old Country gardeners, who give great attention to the training of trees into fancy forms, often resort to the practice of nicking the bark so as to induce the formation of accidental buds, from which branches may be grown wherever desired.

As there is a difference between the origin

*First Lessons in Fruit Growing—V.

of these buds and those formed in the ordinary way, there is also a difference in the connection which branches, arising from them, have with the branch upon which they are situated. Terminal and axillary buds are formed as the young shoot grows, and

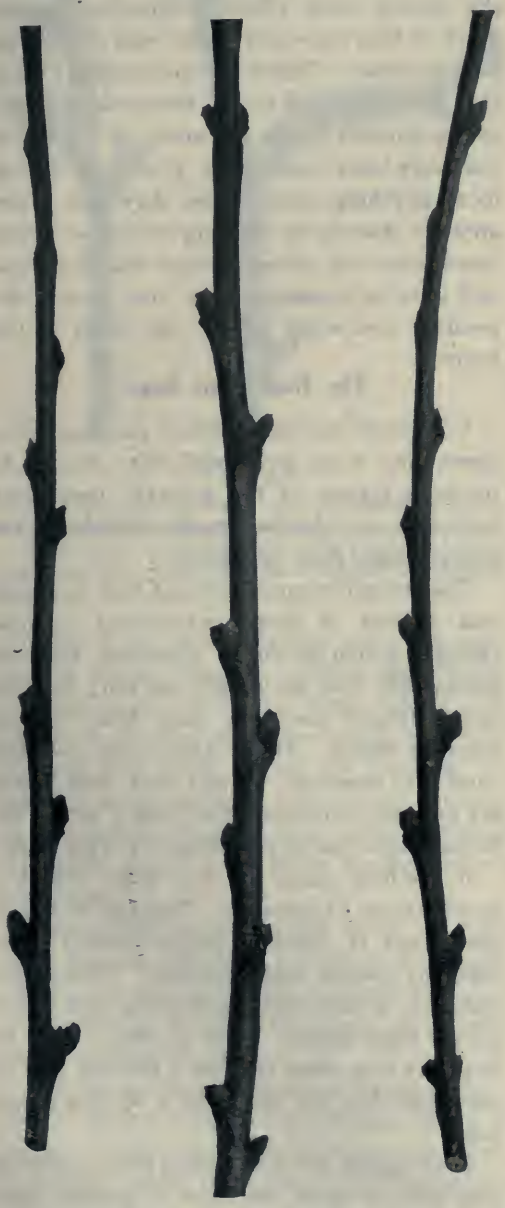


FIG. 2309. PEACH SHOOTS.
The large buds near bottom being fruit buds and the smaller single ones above leaf buds.

are connected with the pith or centre of the shoot. The branches which arise from such growth are therefore formed in the tree. Accidental buds are formed on the older wood, and, as they originate in the cambium layer, they have no connection with the pith or centre of the branch; consequently the branches produced from them are not deeply seated. That is why branches from such buds may at first be pulled off so easily. Each year's growth, of course, helps to bury them deeper, and after a time, they become as firmly united as the other branches.

What Buds May or May Not Do.

If we observe buds to learn what they produce, we will find that some produce leaves or branches. These are called leaf-buds. Others bear blossoms and fruit and are known as fruit-buds. Others simply do nothing, but remain inactive. These are dormant buds. Let us study each of these classes of buds a little more carefully, and we shall learn some interesting things about them.

The Buds That Grow.

Leaf-buds, of course, produce leaves, but every perfect leaf-bud is also capable of producing a branch. This is one of the most important points to know in connection with the propagating and pruning of trees. It is, in fact, the foundation upon which is based all of the most important nursery operations in propagating by cuttings, by layering, by grafting, and by budding.

The terminal bud nearly always produces a branch, or it at least extends the growth of the branch on which it is situated.

The lateral buds are all capable of producing branches, but only a few of the strongest ones near the end of the shoot naturally do so. If, however, the end of the branch should be cut off, thereby giving one of the less vigorous buds below the prominent position of a terminal bud, it

FIG. 2310.

(*b*) Branch of Sour Cherry, showing fruit spur forming on two year old wood, and fruit buds at the base of new wood.
(*a*) Branch of Sweet Cherry, showing these young fruit spurs with clusters of fruit buds; also plump fruit buds at base of new wood.
(*c*) Another of the same, with lengthened spurs, which have been fruiting seven or eight years.

soon rises to the occasion and produces a branch, as well as if it had been a terminal bud from the start. Any perfect leaf-bud may thus be made to produce a branch by cutting off those above it and giving it the position of a terminal bud. In this respect buds and some people are much alike—they do much or little depending upon the prominence and responsibility of the position in which they are placed.

The Discouraged Buds.

If we examine any vigorous shoot after the leaves have fallen, numerous small, more or less indistinct buds may be found near its base. These are the dormant buds that have been left so far behind in the race by the growth at the extremity of the shoot that they have apparently given up trying to do anything, and unless they are given another chance, by heading off those above them, they will always remain inactive, and will soon be covered up by the annual deposit of new wood along the sides of the branch.

The Buds That Bear.

Fruit-buds are those which produce blossoms, and if all goes well bear fruit. In the early stages of the growth, they were leaf-buds, or, in other words, fruit-buds are all developed from leaf-buds.

The transformation of leaf-bud to fruit-bud is one of those mysterious natural changes which go on so smoothly and imperceptibly that we usually see only the result without knowing just how it was brought about. If we study the question carefully, however, we will find that there are certain conditions that have a direct influence upon the development of fruit buds.

In the first place the tree must attain a certain state of maturity. The age at which this stage is reached varies greatly with different species and varieties. Plums, for instance, usually reach a bearing age much sooner than apples, while a Ben Davis or Wealthy tree often reaches a bearing age in about one-half the time that a Northern Spy does.

Then again, we may notice that anything may tend to check the vigor of growth hastens the development of fruit-buds. For instance, trees that are more or less checked

FIG. 2311.

(*a*) Three-year-old fruit spur of Lombard Plum. Fruit buds clustered around end of spurs.
(*b*) Another of the same, after ten or twelve years growth. The rings show annual increase in length.

in growth by being planted on poor soils usually begin bearing sooner than those growing more vigorously upon moist rich soils. Apple and pear trees which have been stunted and made dwarf by grafting on slow-growing stocks usually begin fruiting in one-half the time that the same varieties do when allowed to grow unchecked as standards.

The transformation of leaf buds to fruit buds can sometimes be prematurely brought about on a single branch of a tree by tying it down so as to check the vigor of growth at the extremity.

The time required for the development of fruit-buds varies with the different kinds of fruits. In the peach and apricot, the transformation takes place during the latter part of the first season of growth, and fruit is borne the second season ; while in the apple and pear the change does not apparently take place till the second season. The bud that year produces a cluster of leaves, enlarges considerably, and bears blossoms and fruit the third season.

Fruit-Buds Distinguished From Leaf-Buds.

One of the most striking differences in the appearance of the fruit-bud which distinguishes it from the leaf-bud in its rounder and plumper form. This may easily be noticed when examining a branch of any of the stone fruits, such as the peach and cherry, Figs. 2309 and 2310. In the kernel fruits, such as the apple and pear (Fig. 2312), the fruit-bud has the distinction of being the prominent bud on the end of the fruit-spur. In the plum and cherry, where the fruit-buds are usually grouped around the end of the

FIG. 2312.

Pear Fruit Spurs, showing sears where fruit has been borne, and fruit buds on end of spurs which should bear again.

spur, the leaf-bud, more pointed in appearance than the others will be seen, in the centre of the group, which extends the growth of the spur (Figs. 2310 and 2311).

In the peach, the fruit-bud may be found somewhere about the centre of the shoot.

Another distinctive feature of the fruit-bud is that it usually enlarges and shows signs of growth in the spring much earlier than the leaf-buds.

Simple and Compound Buds.

The peach and apricot have simple fruit-buds, that is, each bud produces but one blossom. Most of the other trees have compound fruit-buds, which bear two or more blossoms. The plum buds bear usually two or three blossoms, the cherry four or five, and the apple and pear six or eight. Hence, the peach and apricot are always produced singly along the branch, while the other fruits may hang in clusters, although this does not always follow, particularly with apples, as only a portion of the blossoms usually set fruit.

THE DIAMOND GRAPE.

THE following additional notes on the value of Moore's Diamond have been received, and our readers will note the great variety of opinions with regard to it. This is of course due in part to the difference of adaptation to different localities :—

"SIR,—I have fruited the Moore's Diamond Grape for six or seven years, and consider it one of the best of our white grapes for the amateur. It is a vigorous grower and good bearer, and of a sprightly vinous flavor, far in advan e of the Niagara. It is, however, a little inclined to rot and not as good a shipper, but I consider it valuable for a near market." A. M. SMITH, St. Catharines, Ont.

"SIR,—Respecting the subject of your letter of 11th inst., I beg to say that I grew Moore's Diamond Grape for several years. The vine was quite hardy and produced plenty of wood. After fruiting it three years I found, that although the fruit was of air quality and the clusters of moderate size, the small quantity of frnit produced yearly, when compared with the Niagara, would not pay me for the trouble of its further cultivation. It was therefore destroyed." THOS. BEALL, Lindsay, Ont.

"SIR,—I have not found the Moore's Diamond Grape profitable. Three vines planted in 1892 on a sandy loam were totally destroyed by the continuous zero weather of February, 1899. They were fine strong vines, but very tender as compared with the Worden and not so hardy even as the Niagara. As to fruiting qualities, I found them earlier than the Niagara, but very spasmodic and unreliable, one year a heavy crop and the next one or two, few if any at all. The grapes are of good quality, free of musk, with large often shouldered, handsome, compact bunches. I still have about a dozen young vines, planted in the spring of 1899. From my present experience I could not recommend it for commercial purposes." A. W. PEART, Freeman, Ont.

ORCHARD INSTITUTE MEETINGS.

BY G. C. CREELMAN, SECRETARY.

AT the last annual meeting of the Ontario Fruit Growers' Association, we were requested to arrange for a series of orchard institute meetings throughout the Province. At the beginning of the year we commenced corresponding with fruit growers in almost every section of the province in order to find out the best points at which to hold meetings. It was deemed best not to commence the series until the close of the Farmers' Institute meetings in March. We realized also that this would be a better time for practical demonstrations than when there was more snow on the ground.

Advertising.

Again we found the press of this country quite willing to co-operate with us in forwarding this movement. We sent notices to each newspaper in the several districts where meetings were held, asking them to publish the dates and places of meeting, and and also a short synopsis of the work we hoped to accomplish. This was done so well that in almost every instance splendid meetings were held, and we are now getting letters every day congratulating the Ontario Fruit Growers' Association on the success of this new venture.

Districts Visited.

In all 49 meetings were held, reaching from Iroquois in the East to Leamington in the West, the province being divided for this purpose into seven districts.

1st. The Ottawa and St. Lawrence Valley District.

2nd. The Lake Ontario District.

3rd. The Burlington District.

4th. The Niagara Peninsula.

5th. The Georgian Bay District.

6th. The Lake Huron District.

7th. The Lake Erie District.

Plan of Campaign.

The object of the meeting was twofold, first, to give a practical demonstration of the best methods of pruning and grafting, and the general care of an orchard, together with a discussion on matters generally pertaining to fruit. Secondly, the formation of local Fruit Growers' Associations in each place for the purpose of giving the fruit growers an object in meeting together once a month to discuss their business. This was the work of the evening meeting, and many associations have been formed and plans laid for regular meetings to be held, where the following subjects, among others, will be discussed :

Methods of cultivation.

Picking, packing, grading and handling of fruits.

Co-operative shipping, and co-operative buying of packages.

Practical results in co-operative buying.

Already the Georgian Bay people have taken this matter up, and have sent out a circular to each of their five branch associations, containing the following information :

"Believing it to be the general wish of the members of the Georgian Bay Fruit Growers' Association to do something in the co-operative buying of packages and chemicals with the object of placing orders during the slack season, thereby obtaining a reduction in prices, we would be glad to have at your earliest convenience a return of the enclosed blank form properly filled out."

Form.

I agree to take the following stock to be delivered at the undermentioned place and at prices not to exceed those mentioned below.

....Apple barrels at....each Delivered....02
....Apple boxes at....each Delivered....02
....Fruit baskets at....each Delivered....02
... lbs. Paris Green at....per lb. Delivered.....02
....lbs. Blue Stone at....per lb. Delivered....02

Signed.....

Place of Delivery.....
Suggestions:–

The Secretary at the same time asks for any suggestions that would be for the general welfare of the Association, and asks the ideas of each member upon the following subjects:

Co-operative buying of supplies, trees; also what they think of establishing an information bureau for the purpose of collecting data on the transportation question, and also to keep the members informed as to fruit prices and other matters of special interest to fruit growers.

In the Lake Huron District.

Reports from this district show a decided interest in the meetings, and the series closed with 108 paid members, and the formation of six societies. These separate societies hope to join hands and send delegates to a central point at an early date when they will organize the Lake Huron Fruit Growers' Association. With Mr. Sherrington in charge of the fruit work at Walkerton we have no doubt this Association will always be a useful organization.

In the St. Lawrence Valley.

Here Mr. Harold Jones, Director of the Experimental Fruit Station, Maitland, held a series of five meetings. An association was formed at each place, and local parties have written to say they do not regret having travelled, some of them on foot, ten miles to the meeting. At each place an orchard meeting was held and in many instances local men took an active part. This is especially true in Iroquois, where Dr. Harkness, who has always been an active worker for the fruit interests, met with the farmers and took part in the discussions.

In this district, strange to say, it was necessary to clear up some superstitions. At one point Mr. Jones was confronted with the statement that it was understood they had been sent there by the Ontario Government to cut down their trees, because they believed there was an insect called the San Jose Scale, working in their orchards. Mr. Jones was able to inform them that there was no scale in that part of the country, and took occasion to tell them how serious the pest was in other parts of the province.

The Lake Erie District.

Here again, a fruit experiment station man takes part in the work, Mr. W. W. Hilborn, of Leamington. A fruit man writing to us after the meeting in Kingsville says:

"I was present yesterday at the meeting of the fruit growers and heard Mr. A. McNeill and Mr. W. W. Hilborn discuss the subject of 'Care of Fruit Trees.' We afterwards adjourned to an orchard where they splendidly demonstrated how to prune the different kinds of trees and bushes. It was very instructive and I wish it could be done in every neighborhood each season."

In Halton County.

Commencing at Bronte, on the lake front, and working back to Waterdown and Georgetown, a series of good meetings was held, Mr. Murray Pettit being the local director in charge. A full report of one of these meetings appeared in the "Weekly Sun," March 29th.

Lake Ontario District.

Here good meetings were held, commencing in York County and working east to Prince Edward County. The series is not

yet completed, but such reports as we have show, as we expected in this splendid apple-growing district, first class meetings and many strong local associations formed as a consequence. The local directors, Mr. Elmer Lick, Oshawa, H. J. Snelgrove, Cobourg and W. H. Dempsey, Trenton, were assisted by Mr. G. C. Caston, of Craighurst and Mr. G. H. Vroom of Middleton, N. S.

Practical Suggestions Made at Orchard Meetings.

In planting, trees should be given a slight slant toward the prevailing wind. The main roots should be placed so as to brace the trees against the wind, and the tree should be so headed that the main branches would not when loaded bend directly away from the tree and so be apt to break off.

Trees, after they have grown crooked, may be straightened somewhat by the use of the spade early in the spring when the ground is soft.

In pruning the south side of the tree it can be left a little thicker than the north side, as it receives more light and moisture.

It pays to thin over-loaded trees at least 20%, as the remaining fruit will be of better quality.

A man who does not know a fruit bud from a leaf bud should never be allowed to prune a tree.

You can hasten the development of fruit spurs and multiply the fruit buds by checking the growth of the wood. This can be done by pruning the roots with a spade, or by nipping off the ends of twigs. The latter method is preferable as it does not impair the vitality of the tree as does the root cutting.

Where large wounds are made in the trees from cutting off large limbs the wound should at once be painted over. A good paint mixture is made by mixing 2 lbs. cement with 10 lbs. of milk. For an old wound where rotting has set in further injury may be prevented by using two parts of cememt and one of sand, completely covering the wound so as to exclude the air.

Orchards should be cultivated constantly until the middle of July, then a cover crop of clover, rape or rye, to be plowed under next spring.

Apples must be handled more like eggs than turnips if we expect to realize good prices for our fruit.

The Baldwin, Ben Davis, Greening and Spy are at present the favorite commercial variety.

Four years ago Reeve Coyle of Colborne purchased an orchard containing ten acres. The price was $2,600. The crop gathered from that orchard in 1900 netted, after all expenses were paid, $2,130. Mr. Coyle made the following statement at an orchard meeting in Colborne last week :—

"I shipped 800 barrels of apples from my orchard two years ago. The dealer to whom I consigned them said they were the best apples he had ever sold in the Liverpool market. There were not five barrels of wormy or scabby apples in the lot. The superiority of this fruit was due to the fact that I had persistently cultivated the orchard and pruned and sprayed my trees."

Bordeaux Mixture.—After the blue stone is dissolved it should be put in 20 gallons of water, and the lime after it is dissolved should be put in another twenty gallons of water. The two mixtures may then be brought together. If the lime and blue stone are mixed together undiluted they will curdle.

Mr. Caston strongly advises the use of lye as a wash for trunks of trees. It should be applied every second year after the old bark has been scraped off. It not only destroys all bark lice, but seems to have a tonic effect upon the tree.

Mr. A. McNeill says, "Each bud has its own individuality apart from the variety to which it belongs, just as each man has his

individuality apart from his race. No two buds, no two trees are exactly alike. Hence in budding or grafting, it is important we should select for that purpose."

Speaking at the Georgetown meeting, Mr. McNeill also made the following remark :—" I do not think our Fruit Experiment Stations could do more useful work than by developing good trees from which to supply cuttings for grafting on commercial orchards in their neighborhood. This would be more useful work than developing varieties of doubtful merit."

Township Inspection for Scale—One of the most alarming features of the plague of scale is the apathy of some orchardists. Mr. Purdy's orchard we found badly infested ; his peach trees, Japan plums and pear trees were covered with it, and yet he was most apathetic. " I cannot get rid of this scale" he said, " it will clean out my orchard in a year or two I expect, but I lived before I had an orchard, and I can live after it is gone."

Now, if nobody suffered but Mr. Purdy, the situation would not be so serious ; but this plague is carried by wind and insects, robins carry it on their feet, and their very nests are alive with it, even flies will carry it ; what then will result if Mr. Purdy and others like him, have breeding orchards from which these pests will spread and cause their neighbors to suffer. Fortunately under a recent Act, local inspectors must be appointed by any municipal council, on the petition of fifteen ratepayers, and such inspectors will compel the owner of any such pestiferous orchard either to destroy his trees at once by fire, or to treat them as directed by provincial inspector.

Action was at once taken both in Grimsby, St. Catharines and Grantham, to the appointment of such local inspector for each of these municipalities.

The Stoney Creek Basket Factory is at work and has been since January, turning out several thousand baskets per day, in anticipation of a good crop the coming season. About 30 hands are employed and the number will increase as the season advances.

The speed which the workman acquires is wonderful. In answer to my enquiry one man said he conld make up from 400 to 500 a day. One little fellow of eight or ten was working in the divisions for berry crates. " I get," he said, " 10 cents a hundred for making them up, and I can make that many in about one hour and a half."

The basket business is one of the most important industries, because of the immense number now used by our fruit growers, who always give them away with the fruit. A traveller for an Ingersoll house says he sold 250,000 between Winona and Grimsby right under the nose of the local factories. One reason for his success was a patent fastener which saves much time in closing up or opening ; and then he was enterprising enough to have the new forms to correspond with the sizes required by the Act, while many of the factories are still at the old sizes, which will all need stamping the number of quarts they contain. The following is a list of the legal sizes of baskets :

No. 1. Capacity, 15 or more imperial quarts.

No. 2. Capacity, 11 imperial quarts, depth 5¾ inches.

No 3. Capacity, 6⅔ imperial quarts, depth 4⅝ inches.

No. 4. Capacity, 2⅔ imperial quarts, depth 4 inches.

No. 5. Berry box, 1 Winchester quart.

No. 6. Berry box, 1 Winchester pint.

THE QUARTER ACRE STRAWBERRY PATCH—II.

BY T. C. ROBINSON, OWEN SOUND.

FIG. 2313.

Cultivation comes next. Some skilful growers say "begin the same day you plant, if the ground is dry enough," for it seems to start the plants into immediate growth. If not just then, as soon after as possible start cultivator and hoe close around every plant, or, best of all, loosen the soil with a hand rake. Keep the ground clean all summer. Don't wait for the weeds to start. To kill them before you can see them is by far the easiest way and pays the best. So long as the ground is loose on the surface, and the weather dry, the plants will do well without further cultivation. But as soon as a shower come the land settles, and the weed seeds sprout; so that as soon as the weather gets dry enough, cultivator, hoe or rake must loosen up the surface again, or the plants will suffer. This is the great rule in strawberry culture. But it is not for the strawberry alone. The strawberry does not need it any more than vegetables do. It is the one sure rule in growing a hoed crop of any kind.

Training.—Now for the training. This really involves a judicious sort of **pruning.** To get a large crop of fruit we want large plants and lots of them. and we want them well equipped with fruit-buds. These fruit-buds must be formed the summer and fall before fruiting; and the plants must have sufficient room and close cultivation in order to form them. Now most varieties, if allowed to grow unchecked, will use the sap, which we want to go to elaborate fruit-buds, in producing runners and young plants, and it will throw out these runners so as to root the young plants in the way of the hoe and cultivator, and especially so as to crowd each other. As a result, the matted row will contain a crowded mass of little plants which cannot be kept clean, and cannot produce more than one or two small fruit stems per plant. These will all push at once, or nearly so; and hence there must result finally an inferior crop of small berries, all ripening within a few days causing an embarrassment to pick, a glut in the market, a drop in prices—and then—nothing more! To avoid such disaster, we resort to **pruning** and **layering.** Cut off the first two three runners, which are apt to be weak. The benefit of this will speedily appear in vigorous growth and size of plant. Then when good stout runners start out vigorously, select four of them to complete the plantation, and keep all the others cut off the whole season.

Now for Layering.—Consider where we want the plants—out of the way of the cultivator and far enough apart to admit the hoe. I have fixed upon the double row as

the best in most cases. First choose one pair of runners to complete the old row. Lead one runner out towards the nearest plant in the row on one side, drawing a little furrow with a stick to keep it from getting blown out of place, and lead the other runner out in the opposite direction. When this is done with every plant allowing each runner to form just two plants, all the rows will be full of plants about eight inches apart.

Now lead out to one side the other pair of runners to form a second row about eight inches from the first row. You need not wait till the first lot of rows are finished before starting the second lot. Each runner to be layered had better be done as soon as it is ready. The process of forming young plants will be greatly hastened by placing moist earth over the runner close around where the roots of the little plant are to strike out—**if the runner is strong enough.** But beware of putting earth over a young budding runner, or it will die. When a couple of leaves as large as a fifty cent piece have formed on the runner, it is old enough to be covered on the side next the parent plant. Now when this layering is all done, your rows will be arranged in couples with paths of about twenty-eight inches between each couple and the next, and your quarter acre should contain ten or twelve thousand plants, everyone of which can easily be kept clean with little or no hand weeding, which is the great object. Of course runners will start to grow from the young plants as they form and afterwards. They must vigorously be removed if the best results are wanted. Do not be tempted to train out a third row on the other side of each original row unless you want to shorten the fruiting season in order to produce a great rush of berries at first. This would be an advantage with the very early sorts. Michel's Early, possibly Crescent, and especially Excelsior, will probably be decidedly more profitable grown in triple rows eight inches apart, with paths of twenty inches between triplet and the next; because they come in just when prices are so high. Often the grower will make more money out of half a crop of these early varieties than of a full crop of later ones. Then when they have done their best, and the berries run down in size to mibbins, the wise cultivator will clip off all the rest of the fruit unripened so as to throw the remaining strength of the plants into foliage, new root-growth and fruit-buds for next year's crop. Some early varieties thus treated in triple rows, followed by later varieties in double rows, will spread the fruiting season over a month on level soil, while if the early sorts can be set on a southern or south-eastern slope on light land and the late ones on a northern slope on clay loam, abundance of fruit may be gathered for six weeks. But the slopes must not be steep.

Yield.—How much should such a plantation yield? The yield will vary, not only as to careful treatment, soil, fertility and season, but also as to the age of the plants. With fair treatment the same plants will fruit three years in succession. The first crop should be over 1,500 quarts in a fair season; the second about 3,000; the third about 1,000; but on rich soil in good seasons, careful treatment might produce twice as much in each case.

The best tool for working between the plants is a "push hoe." Get one made to order as I did if you can't find what you want in the shops. A piece of cross-cut saw blade about five inches long and two inches wide fastened by two rivets at the middle of one side to a single six-inch shank of 3/8 inch steel attached to a good long rake handle—this can easily be fashioned by any machinist or good blacksmith for sixty or eighty cents. Let the shank be curved so that when yon stand upright and hold the end of the handle in one hand, with the arm stretched down-

wards at full length, the blade will lie quite flat on the floor with the shank on the upper side. Now file or grind the blade always on the upper side, and you have a tool with which you can hoe all around every plant and cut runners without stooping or jar, and do it as fast as two men with common hoes, even if your muscles are those of a lady. Such a hoe indeed may be used to clean the wide spaces also, if you have no horse; but in this case the blade should be longer, so as to cut a wider strip. A foot wide is not too large for a strong man in loose soil, but it works much easier if the cutting edge is not straight, but comes to a point in the middle and falls away at each side like a half-flattened-out letter "V." But beware of having two shanks attached to the blade like the old fashioned Dutch hoe, as they prevent the weeds from passing through in case you should be so unfortunate as to get behind with the work. But don't get behind if you can possibly help it. Your quarter acre patch can be hoed from beginning to end in a single day when the weeds are sprouting, more easily than it could in a whole week if they get established.

Varieties.—Stick to standard sorts for the crop, is the safe rule. Experiment with novelties at one side in a small way, for that is how we get all our best varieties. Better not break a row with two varieties. Select your land, count your rows, measure their length, decide on how many rows for each variety, then order the plants.

For setting out eleven hundred plants on a quarter of an acre, I recommend to those just starting the following varieties in about these proportions: 500 Clyde, 300 Williams, 200 Excelsior, 100 Michel's Early. If the land is very light, and good Crescents can be obtained cheap, by all means get them instead of Clyde, but Clyde will sell far the best if you can raise them. If the land is low and mucky, William Belt may do better than Williams. If the berries must travel far or stay long in the box before using, leave out Michel's Early and add another hundred Excelsior, and in this case, if your land is rather clayey and quite rich, it might be well to grow good Wilsons instead of Clyde, because though smaller and less beautiful, the Wilson excels in firmness.

General descriptions of varieties, new and old, I must postpone to a later article, hoping that some who would be glad to grow this beautiful fruit may find these plain directions of some utility.

SOIL FOR CAULIFLOWER.

A deep, moist, clay soil is the best for cauliflowers, although good crops can be grown on any good garden soil. I cover the ground two or three inches deep with stable manure, and plow it in. Then harrow and furrow two and one-half feet apart. If I have well-rotted manure, I scatter it in the furrow and mix it with the soil with the cultivator; or, if the manure is not at hand, I set the plants and in a few days apply around them a little commercial fertilizer that is rich in nitrogen. Vegetables of which the leaves or stocks are the edible parts need plenty of nitrogen in an available form. The plants are transplanted at different times from May until June. Cauliflower plants from the hotbed should not be set too early, unless they are well hardened, for they are more easily injured by frosts than cabbages. I do the most of the cultivation with the wheel hoe and horse cultivator.

To insure success in a season, one must have some means of irrigation. I have now irrigating works in my garden, so that I may be prepared for drouths when they come. The plants should not stop growing at any time, hence the importance of irrigating them during a drouth.—*Vicks' Magazine.*

BEDDING GERANIUMS.

BY W. H. HUNT, SUPT. GREENHOUSES, O. A. C., GUELPH.

IT is oftentimes a most difficult task to select the best varieties of these most useful and popular bedding plants, and those most adapted for bedding out purposes, from amongst the numerous variettes now offered by florists and nurserymen. Despite the fact that many of the most prominent landscape architects and gardeners consider that a bed of scarlet or of any decidedly prominent color of geranium is somewhat out of keeping and shows bad taste if planted on a front lawn, the geranium is still the one universally popular bedding plant amongst the great majority of flower-lovers. The increased demand for these plants every season of recent years have brought to the front many beautiful varieties and types that have proved most useful as decorative plants, whether for the greenhouse or window in winter, or for the lawn and flower-garden in summer. Those of us who remember the varieties of bedding geraniums grown upwards of a quarter of a century ago, such as Scarlet Stella, which though beautiful in color would with its narrow petaled flowers and its loosely formed truss, bear no comparison (especially in form) with such varieties as J. P. Cleary or even of the better known Alphonse Riccard, Gen. Grant and others having good records as bedding varieties at the present time. The old pink Christine and the Dwarf Scarlet Gen. Tom Thumb grown so extensively about the time that Scarlet Stella was such a favorite, have all been superseded by many varieties of greater merit, not only as decorative plants for the garden but also for cut flower purposes for use in the home. Although the old fashioned varieties that I have mentioned had of necessity to be dropped from our list they will be remembered by old time plant lovers as having been most useful in their day and as being the progenitors of the beautiful varieties and types now in existence.

A New Era.—With the introduction of the really double flowering varieties Glorie de Nancy (scarlet) and Madame (pink) about the year 1866, came a new era in geranium life. These were the heralds of the beautiful semi-double varieties that are so popular at the present day. Both of the varieties mentioned caused quite a sensation at the time of their introduction, but like many other new types of

plants did not apparently meet the requirements of the flower-loving public even at that time, their strong rank habit of growth and the density of their flowers in the truss, made them undesirable as either greenhouse or garden plants. Like the earlier types of the single flowered varieties before mentioned these, however, were useful in their day, and were the pioneers of the lovely double and semi-double varieties now so extensively grown and admired.

Amongst the double and semi-double varieties of geraniums useful as bedding plants, there is none more reliable and deservedly popular than the rich crimson flowering variety, S. A. Nutt. Whether planted in masses or used in ribbon borders, or even as a simple plant in the border, this variety with its dwarf and free floweriug habit, is generally regarded as the peer amongst what may be termed the ironclad varieties of geraniums, having a good robust constitution.

Amongst Scarlet Geraniums for bedding, C. Morel seems destined to become a great favorite. The trying season of 1901, with its alternate intervals of intense tropical heat for a few days, followed by a quite temperate spell for the same period, seemed unable to dim the lustre of its vivid scarlet flowers, or check it in its sturdy growth. Unless it develops some unexpected form of deterioration, the same as the Bruant geranium has of recent years, viz., in going back almost to a single flowering variety, C. Morel must have a place amongst the scarlet bedding geraniums.

Alphonse Ricard is also a reliable variety, succeeding well under very adverse circumstances, its flowers also give us a pleasing relief with their soft orange shading. Raspail Improved I do not consider a good bedding variety as it does not stand the sun well and is too upright in its habit of growth to make it a good bedding variety. Beaute Poitevine is a good bright salmon flowering kind, and succeds well outside in summer.

For a pink flowering variety Jean Viand can be recommended. Where this variety was tested last season it gave good results, stood the hot sun well, the flowers retaining their form and color even when severe heat and heavy rain storms sadly marred the beauty of many other varieties growing near it. The old dwarf growing variety Waddington, that has deservedly earned for itself the name of "Pink Bedder" as well as several other synonyms, cannot yet be discarded from the list of pink geraniums. For a small bed or for ribbon effect this variety is in my opinion still unsurpassed as a bedder, bnt is of little use as a pot plant or for winter flowering purposes.

Amongst the lighter colored double varieties, La Favorite for a white is probably the best white flowered bedding variety. Hermine that produces its ivory white flowers in such profusion, when grown as a pot plant for the window or greenhouse in winter, is not adapted for a bedding geranium, the hot sun stunting its growth and often stripping it almost entirely of its small delicate foliage. Gloire de France, another good variety when grown as a pot plant, is also of very little use as a bedding variety. Its pretty pink and white flowers and its pretty marked foliage, however, make it still one of the best varieties for a window, or for the conservatory.

Amongst the single flowering kinds, Gen. Grant for a scarlet still holds a place, and is very effective when massed in large beds, or when used in ribbon or mixed borders.

Meteor is another good variety, not quite as intense in color as Gen. Grant.

John P. Cleary comes as near what is considered a perfect flower as any of the single flowering varieties, and where tested has stood the sun extremely well. A fully

developed truss of this variety is a pleasing sight to all who love a soft orange scarlet flowering geranium.

Mrs. E. G. Hill is not yet surpassed for habit of growth and for producing a wealth of bloom under almost any condition of growth.

Dryden is a single flowering variety that promises well as a bedding variety. Its finely formed and beautifully blotched and tinted rose red flowers, makes it quite an acceptable addition to the list of single bedding geraniums.

Amongst the silver foliaged geraniums there is nothing can outdo Madame Salleroi, especially as an edging or border plant. Mountain of Snow is about the only other variety of silver edged geraniums worthy of growing as a bedding plant.

Tricolors and bronze geraniums cannot be included amongst the list of bedding geraniums, being far more difficult to succeed with than even the most delicate of our summer flowering begonias. As pot or window plants they still have a place, but are of too delicate a nature to succeed as bedding plants.

There are many more varieties of geraniums that could be spoken of as good bedding varieties other than those I have mentioned. Those that I have mentioned are varieties that will give good satisfaction with perhaps less care and attention than many other varieties, a fact that has influenced me materially in recommending them for out door decorative purposes.

HARDY PERENNIALS.

BY WEBSTER BROS., HAMILTON.

AQUILEGIA Oxysepala continues to excite great interest when in flower; it is the earliest of the Columbines so far as we know. This is the same variety disseminated as a premium some years ago by the F. G. A. as A. Bergeriana, but according to the Central Experimental Farm the former name is correct.

Anemone, Queen Charlotte, is a real beauty, it is the first pink Anemone of this class and is at the same time the best of all the Japan Anemones, being larger and of better substance than Whirlwind and a beautiful pink shade much like Rose La France. These Anemones may be flowered to great advantage, if lifted and potted before the buds begin to open, a little shade for a few days is all that is necessary to get them established; then, if kept in a cool conservatory or even in a cold frame, away from the wind or light frosts, the flowers open much larger and more perfectly.

Doronicum plantagineum excelsum is a dwarf yellow flowering plant, bearing handsome flowers resembling some of the Sunflowers; it is very pretty but suffers somewhat during winter when the snow fall is light.

Helenium Autumnal Superbum is one of the most noticeable of late bloomers; its flowers remind one of Giant Buttercups; it is a plant that should have lots of room. When it blooms it is a specimen of great beauty.

Phlox Etna has proved the best scarlet variety of the tall phloxes we have tried. We are trying some of the potentillas from a British collection but fear they will not stand the rigor of this climate.

FIG. 2314. CAMELLIA.

SPECIMEN CAMELLIA.

BY W. H. HUNT, HAMILTON, ONT.

THE accompanying cut from a photograph of a splendid specimen of these almost forgotten greenhouse shrubs will no doubt interest most readers of the Horticulturist, more especially those who have seen these plants in conservatories and greenhouses in the old land. There are few even of the smallest specimens of the Camellia to be found amongst our plant collections of the present day.

Very few plant lovers have been successful in their culture in Canada, three or four years of a gradual declining existence being as a rule the outcome of any attempt to grow these natives of Japan and China. Mr. Thos. Kilvington, the well-known Hamilton florist, has certainly overcome the difficulties usually experienced in the sucful culture of the Camellia. The plant, as shown in the engraving, is really a noble specimen and can be seen at any time in his greenhouses. It is seldom that it can be found without a few buds or blossoms of its beautifully imbricated rose-colored flowers, its flowering season usually extending from September until well on to June or July of the following year. It was planted in its present position by Mr. Kilvington about eighteen years ago and has produced annually, for ten or twelve years past, about two hundred and fifty blossoms. It is planted in an open border, in a lean-to house, having an east aspect. The border is about two feet six inches in depth and about three feet in width, so that it has plenty of root room as well as allowing facilities for an abundant supply of water at the roots. This latter condition is probably the principal factor in its successful culture. It endures a very variable temperature during the year from 50° in winter to 120° in the hottest days of summer.

The plant is about six feet in height and three or four feet through the densest part of the plant, and but for a severe annual pruning that it receives, it would, as its

owner remarked, soon require a much higher house to accommodate it. Near by the Camellia in the same border is a splendid specimen of the beautiful trailing shrub Rhynchospermum jasminoides, which at this season of the year is usually almost completely covered with its white, sweet scented jasmine-like flowers.

It is a pleasing sight, and will well repay a visit to Mr. Kilvington's greenhouses to see these choice specimens of plants that are so seldom seen now in greenhouse collections, not to mention anything of the pleasure a flower lover derives from a walk through his well kept and select general collection of florists' plants.

The accompanying photo was taken very recently at a time when it does not show up the plant to the best advantage, so far as its profuse flowering habit is concerned.

NEW FRUITS.

The McKinley Grape was introduced last year by Allen L. Wood of Rochester. It is a cross between Niagara and Moore's Early, and is two weeks earlier than Niagara in ripening. The originator claims that the berries are as fine as those of Diamond, and that the vine is very productive. The bunches are said to be compact and firm, and the fruit sweet throughout the pulp.

Perfection Currant.—The fact of this currant having received the award of the Barry medal at Rochester this season, leads us to look upon it as of real value. It was originated by Mr. C. E. Hooker of that city, and has been tested at the Geneva Station, where it has been given a favorable notice. Cuttings were planted in 1897 and these are now bearing so freely that it is pretty safe to look upon the bush as productive, while the size of both the cluster and berry are even larger than Fay. The flavor and quality, too, according to Prof. Beach, is better than either Fay or Cherry.

Harris Raspberry.—The originator writes us that we must plant the bushes in heavy rich soil, and that they must not be trimmed at all, at any time in the year, except to remove the dead wood; that they will be a failure if treated as other berries are treated. We have sent samples for testing to A. E. Sherrington, Walkerton, and A. E. Peart, Burlington. This raspberry was a chance seedling found growing near Rochester. The following points are claimed in its favor. (1.) A dwarf plant, needing no staking or trimming back. (2.) Fruit larger than Cuthbert. (3.) Longer bearing season, ¼ crop ripening before Cuthbert and ¼ after. (4.) Very hardy. The report of the Geneva Experiment Station gives it credit for greater productiveness than Cuthbert, a yield of 25 feet of row yielding 290 ounces, and Cuthbert only about 150, Prof. Beach wrote of it in 1896 as follows.–A row of Harris set in 1889 yielded nearly twelve pounds of fruit per rod in 1894. This is at the rate of over 5000 pounds per acre, with rows 6 feet apart as we grow them.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

QUESTION DRAWER.

Pears to Cover the Season.

1282. SIR,—I have about three-quarters of an acre here, clay soil, which I intend to plant in pears. I am planting because I do not like to see bare land, and I have no intention of building on it. I expect to derive much pleasure in growing the fruit, and I desire to make it as profitable as I can. I have done some farming and managed to make the farm pay expenses, so I hope to do all right in pears when I have found out what to plant. I am intending to plant 24 feet apart, I want the crop to drag through the whole pear season, so that I will have pears to use and sell from start to finish; and, what is more, I want to have the crop coming in so gradually that its care will furnish me with occupation over a long season, without amounting to a rush. There will be fifty trees. What pears I do not use I could likely find market for in the village, or at the canning factory; and I would like you to advise me what kinds to plant and how many of each. I want summer, autumn and winter pears, and it strikes me I should hot have many varieties. From reading my journal and the reports of the fruit growers, etc., I begin to fear there is more difficulty ahead of me than I at first thought. At home in Norfolk, where we were farmers, we had Bartlett and Flemish Beauty pear trees standing in sod, but never heard of blight, etc. We did not know there were these enemies.

Cayuga. T. A. SNYDER.

For such a collection, as is proposed by our correspondent, chiefly for home uses, we would recommend the following as a desirable list :—

Summer—Doyenne d'Ete, Giffard, Wilder, Clapp's Favorite, Bartlett.

Autumn—Bose, Clairgeau, Sheldon.

Winter—Lawrence, Josephine de Malines, Easter Beurre.

This list would cover the season, beginning with that delicious little dessert pear, the Summer Doyenne, which is as pretty as it is good, and ripens in July; and ending with the Easter Beurre, which makes up in good quality what it lacks in appearance, and may be held for market until March.

Grafting.

1283. SIR,—I am grafting in this section this spring. There are some who have set out Talman Sweets for grafting; this will be the third year they have been planted. Would you advise them to be grafted this spring and if so would you graft them near the ground, just below the branches, or graft the limbs. Some want them done one place and some another, so I would get your opinion in the matter.

Port Perry. JOHN MACLACHLAN.

It is simply a matter of choice. We would prefer to splice graft the trunk just where the top is expected to form, especially if it has made a nice straight growth. The Talman makes a fine healthy stock, and should form a good trunk for carrying the top.

Kettles for Cooking Lime and Sulphur.

1284. SIR,—What kettles ought I to use for cooking the lime, salt and sulphur wash.

A SUBSCRIBER.

If kettles are used I would prefer two fifty gallon kettles, as plenty of hot water should be always on hand, and two are almost necessary to economize time. A second lot may be commenced in one while the first is finishing, and, when the first is emptied into the barrel it can at once be filled with water for completing a second lot. Cooking by steam is no doubt much more economical, where practicable.

Burlington. G. E. FISHER.

Crude Oil for Canker Worm.

1285. SIR,—Do you think spraying with crude oil, before the leaves open, would kill the eggs of the canker worm, now thick on the orchard trees.

A SUBSCRIBER.

Henry Clendenning of Manilla says he killed oyster shell bark louse eggs by spraying his apple trees with crude oil, immediately before the leaves appeared. The oil might kill the eggs of the canker worm but I have had no experience. The vitality of eggs is hard to destroy, but I think it well worth trying. I think I have succeeded in catching most of the canker worm moths in my orchard last fall with the sticky bandage.

Freeman, Ont. GEO. E. FISHER.

Canker Worm.

1286. SIR,—The canker worm was bad in my Spy orchard last year, and the eggs are very abundant. How had I better treat them? Would crude petroleum kill the eggs? A SUBSCRIBER.

I have your letter of the 31st ult. I consider the best remedy for Canker worms is to band the trees in autumn and spring with bands of paper smeared with a mixture of castor oil and resin, as recommended in my reports. In spring as soon as the leaves expand the trees should be sprayed with poisoned Bordeaux mixture using the regular formula recommended by us, namely, four pounds of copper sulphate, four pounds of fresh lime, four ounces of paris green and forty gallons of water.

J. FLETCHER,
Dominion Entomologist.

Export of Fruit.

1287. SIR,—Do you think it best for a shipper of fruit to England to deal with one commission house, or with a number of large "purveyors" or retailers?

What is the smallest amount of space to be obtained on board of ship in cold storage?

Does all fruit delivered at Liverpool have to be shipped via canal if for Manchester, or is railroad as cheap?

If you were one of a company expecting to trade as above, would you think it best to have a representative meet personally the commission firm to whom shipments are expected to be made? In other words, isn't it more satisfactory on both sides to come into personal touch at the start?

How many bushel boxes, or how many barrels can be packed in the smallest space a steamer will contract for in cold storage?

SUBSCRIBER AT ROCHESTER.

I think it far best that you should deal entirely with one first-class house, and grow into mutual confidence.

The amount of space you can get in cold storage depends upon the outfit of the steamer. The usual amount is about four carloads, or between 5000 and 6000 cubic feet, but sometimes these compartments are subdivided.

In shipping to Manchester, you can have the fruit forwarded either by rail or ship canal as you please; the latter is considered

cheapest. I think a personal interview at the outset might prevent a great many misunderstandings.—*The Editor.*

Cherry Aphis.

1288. SIR,—I propose to try the crude petroleum for cherry aphis. When should I apply it? Is it useful for any other purpose? A SUBSCIBER.

In treating trees for aphis I think the treatment should be late, when here and there a blossom is open is the time. Crude oil is useful for many purposes. It is good to paint tools with to keep them from rusting. Whale oil soap applied very late has reduced aphis very much.

Freeman. GEO. E. FISHER.

Ferns and Insects. (See question 1277).

SIR,—No doubt the insect destroying the foliage of the ferns belonging to Miss E. P. Battersey, is the fern thrip; an insect not easily got rid of. I thought that some might be glad to know the following receipt for destroying this insect; take one ordinary tea cup full of whale oil soap, dilute the same in a patent pailful of hot water, when cool, dip or spray the plants; this will kill the scale, green fly and red spider. Before using test a branch of your plants in it, for fear that it might be too strong. I use it on all plants, even on coleus.

Niagara Falls South. R. CAMERON.

The Laburnum. (See question 1274).

SIR, I have no doubt that your answer as to the tree not being hardy in the province of Quebec is quite correct, but in the vicinity of Niagara Falls it grows and blooms beautifully. This tree is better planted in the shade, in a heavy loam, well drained.

Niagara Falls South. R. CAMERON.

OPEN LETTERS.

Apple Boxes.

SIR,—In the January number of your valuable journal page 35, Mr. N. J. Brandrith, Secretary B. C. F. G. Association, writes regarding apple boxes, suggesting uniformity.

This question is of importance throughout the Pacific slope fruit growing region, and has attracted the attention of the fruit growers and handlers, as well as the box makers for some time.

At the meeting of the Northwest Fruit Growers' Association in Portland, Ore., in February, 1901, the matter was up for consideration during a part of two days, and after careful deliberation of a representative committee, of not only orchardists, but also commission men, railroad men, express men and box makers, they reported recommending two sizes, or rather two forms of boxes for apples, which report was unanimously adopted.

One box, the "Standard", to be 18 inches long, 11½ inches wide, and 10½ inches deep. Another the "Special" to be 20 inches long, 11 inches wide and 10 inches deep, all inside measure. It was recommended that end material be ⅞ inches thick and the sides ⅝ inches.

At the recent meeting of the Association, January 28th, 29th, 1902, at Walla Walla, Washington Ty., the matter was reviewed at length and the action of a year ago affirmed, to adopt and use these sized boxes These boxes are destined to become the standard in the states of Oregon, Idaho and Washington, and as British Columbia is included in the territory covered by this Association, it should be the standard in that Province as well.

Hon. J. R. Anderson, Deputy Minister of Agriculture for B. C., is an active member of the N. W. F. G. Association, and Vice-president for the B. C. Association, was present when the action was taken in 1901, and would, I have no doubt, render the B. C. F. G. Association valuable assistance in settling this troublesome question. I would advise Secretary Brandrith to put himself and the Association he represents into communication with Mr. Anderson, and use their best endeavors to bring about a uniformity in apple packages throughout all our territory. Hoping to see this accomplished.

Nampa, Idaho. ROBERT MILLIKEN,
Sec'y Idaho Station Hort. Soc.

We cannot see the wisdom of recommending two sizes of apple boxes. Here is the great fault with our fruit packages, now that we have so many sizes, that no longer can we tell what we mean when we quote the price of box or basket? And when it comes to loading a car for distant shipment, how in the world can we pack to advantage, with so many different sizes? And again, when engaging space on the steamship in a cold storage compartment, how can we reckon how many cubic feet we need for, say one thousand packages of different sizes? If, on the other hand, a box is say 10½ x 11½ x 22 outside measurement, we can, allowing for

ventilating space, and count that each box will require two cubic feet of space.

We in Ontario have thought this matter out so closely that we are trying to bring all cases for all fruits to one exterior size, and trying to fit the smaller interior boxes to fit. To do this we may possibly have to vary the standard exterior a little from the apple box, but we would certainly hail such a case with great satisfaction, and we are trying to work out the problem this very season.

FIG. 2315.

Two Rare Plants.

SIR,—I enclose you a photograph showing two rare plants, the one to the left with the palm-like leaves is Begonia luxurans; the plant looks very unlike a begonia in growth and flower; it produces flat panicles of pure white flowers in summer. The plant is very decorative on account of its beautiful foliage.

The plant to the right is a shrubby variety of the Eupatorium, producing very large terminal corymbs of purple flowers during winter. The leaves are large ovate, height three feet, a native of Mexico. This is a very useful winter flowering greenhouse plant, that should be better known. The flowers are larger in panicle, and the florets individual, in form and color of flowers very like a large Ageratum.

Niagara Falls South. R. CAMERON.

Prize for Hardy Plants.

SIR,—I have noticed for some years in the Toronto Industrial Exhibition prize list, a prize offered for the best collection of hardy plants, including fancy foliage or ornamental foliage, cut specimens. Now, Mr. Editor, anyone familiar with the subject will know that this will include trees, shrubs and hardy perennials, cultivated and uncultivated, comprising hundreds of specimens all correctly labeled, and only five dollars is offered as a prize. In my estimation five dollars is little enough for each division, let alone the whole three.

Every year there is a large sum of money offered in prizes for collections of tropical plants. Now I find no fault with tropical plants, they are useful and educative; but how much more important is it to cultivate a taste for hardy plants suitable to our own climate, and what better place to show these plants and cultivate that taste than at the Industrial Exhibition?

From the interest shown by the public at Farmer's Institute and Horticultural meetings, it would seem as if they wished to become better acquainted with such stock. Nurserymen will tell us that they cannot sell such plants, but from my experience it would seem that they are mistaken, if the numerous questions that are asked of me regarding where such stock can be got, how to care for it, etc., count for anything.

I hope that the attention of the directors of the Industrial Exhibition may be drawn to the above subject, and that it may meet with their approval, and that they will see fit to make the desired changes. Fostering a love for such plants means beautifying our homes and our province, linking therewith health, wealth and contentment.

Niagara Falls South. RODERICK CAMERON.

The Lime Washes.

SIR,—In the April number of the Canadian Horticulturist Mr. Jeremiah S. Clark, of Bayview, P. E. I., wished to know if there was any difference between the lime, sulphur and salt mixture recommended by Mr. Geo. E. Fisher and the lime and salt mixture recommended by myself. The reply stated that the wash recommended by me was simply to retard bloom. I write to correct this, as for more than two years I have advocated its use for the eradication of oyster shell bark louse, and as recently as in the February number of the Horticulturist, which was referred to by Mr. Clark. This wash has given great satisfaction when used as directed, and I believe it to be the best known remedy for the oyster shell bark louse.

Its effects on the San Jose Scale have not been satisfactory, however. In December, 1900, with the assistance of Mr. Geo. E. Fisher, some experiments were tried at Niagara, but it apparently had no injurious effect on the San Jose scale. The mixture used at that time was made with lime, salt, milk and water. The lime, salt and sulphur mixture as now recommended by Mr. Fisher has evidently given good satisfaction.

Yours truly. W. T. MACOUN,
Horticulturist.

The Canadian Fruit at the Glasgow Exhibition, from an English Fruitman's Point of View.

SIR,—I have perused in your admirable issue of January with very great interest, the report of Mr. R. Hamilton, and I am sure you will join with me and my English confreres in wishing that our Canadian cousins will get at the real truth about the fruit exhibits, so that in their trade with this country, they may not be led astray.

I have the honor to be associated with the only paper, I think, which takes up the fruit question altogether from its commercial standpoint in this country, and moreover we are not of that number who would exclude the importations of fruit, etc., in order that our home growers may keep the field. We rather welcome all good fruit that comes, especially that from Canada, and advise our home growers to go in for newer methods of cultivation. For years we have been advising them to restrict the number of varieties, especially of apples, and grow only 6 to 8 varieties suited to the market requirements. On reading the report of your correspondent I was inclined to hold forth upon the grit and go of Canada, and I did so to my chief, and I think I cannot do better than give you just what we said.

I personally was unable to go to Glasgow during the time the Exhibition was on. Your correspondent speaks of the praise of the public. He must remember that the general public know little of fruit culture as we see it and they probably did "Blaw in his lug a bit." My chief says: "My object in going there (to Glasgow) was to look at this Canadian Fruit Exhibit. I was not greatly impressed, in fact it struck me as rather a slow show, although a fine exhibit in many respects. There was some excellent bottled stuff from Canada and in matters agricultural a fine display was made, but speaking generally of the apple show, a few sorts of apples were good but there were such a thundering lot of sorts that one was bewildered. If they could have reduced the very large number of sorts to about 6 or 7 and have covered a table 5 or 6 feet sqnare with them they would in my opinion have made some impression. I thought you would like to know this." Regarding your notes as to packages, I quite agree with Hamilton that the barrel is doomed, and we understand that a package, which we strongly recommend Canadian senders to adopt is gradually being adopted with best fruit, i. e., a small case containing about 40 pounds of fruit. The Australian and Tasmanian shippers especially have taken our advantage to heart and have adopted our form of package generally."

Such, Mr. Editor, is the outcome of the Glasgow Exhibit as seen by practical fruit-growing eyes, and by one who is strenuously advocating all things that can tend to bring good cheap fruit to the millions in the old country, and by one who at the same time as strenuously strives to get these things done to the advantage of the grower and fruit salesmen.

W. F. EMPTAGE.

OUR AFFILIATED SOCIETIES.

Kincardine.—Mr. Welsh, the President, occupied the chair in his usual manner. After his introductory remarks the H. S. students, or a number of them, gave two of their excellent selections, a drill and chorus, "Coon, Coon, Coon." As our readers know, the meetings and entertainment were held under the auspices of the Ontario Fruit Growers' Association conjointly with the Kincardine Horticultural Society, and the best speakers of course were procured. The first to appear upon the platform was Mrs. Torrance of Chateauguay, Quebec. She gave an excellent address on "Every day plants of our homes and gardens." She started out by giving some practical suggestions in beautifying our school grounds and streets. She very sensibly recommended the planting of nut trees along with our beautiful maples. For the sake of effect and to imitate nature she said we should not plant trees in rows and one just opposite another in our lawns and parks, etc. She admired the barberry of which there were fifty-two varieties. She then explained the cultivation of such shrubs and plants as the spirea, hydrangea, catalpas, etc. Her remarks on the perennials were full of interest from first to last. The home, she said, was the foundation of the nation. We should beautify it. Men and women should assist each other in making the home the happiest place on earth. "There is no place like home, be it ever so humble" The speaker dwelt upon the necessity of harmony in colors, the same as in dress. A score or more of plants were named in decorating the yards and lawns. Biennials also were discussed, among them being the pea and veronica. The chairman requested anyone in the audience to ask the speaker some question, and failing in this he gave his experience in growing walnut trees on his farm, which was interesting.

At this stage of the meeting sixteen young women (H. S. students) dressed in white, made their appearance on the platform and rendered in grand style the old southern melody, Rock-alow. The mandolin accompaniment was very fine, the operator being behind the curtain.

The chairman then introduced the next speaker, Mr. E. B. Stevenson, M. A. of Jordan Station, Ont. His subject, "Strawberry culture and the promising new varieties," was taken up after a smart little talk about "Bulb growing." He had had a talk with the young folk in the afternoon in the same place and was warmed up. His remarks were not only timely but appreciated by his large audience. He reckoned the Kincardine Horticultural Society was booming, when such large crowds would come to hear talks about Horticulture. He

dilated upon the benefit of being a member of the Society.

His talk on strawberry culture was very interesting. Men have made from $200 to $1000 from one acre. The eyes of the small boys opened and their mouths watered as he told about the large strawberries—as large as snow apples—that had to be sliced to be eaten. In fact he said they were too large to go into the boys' mouths. If the speaker had a plot of ground he would have it half in strawberries The H. S. Zobo band gave a selection in fine style which was applauded.

The Society may feel grateful for having such first-class officers. There are 116 good members and "there's more to follow."

Mitchell.—On the 17th of March we held our second annual Horticultural Society meeting in the Town Hall. Like its predecessor of the year before it proved a large, select and enthusiastic gathering. The hall was crowded to the doors, and when Mrs. Torrance rose to speak she said that she had never before seen so many prominent, and would-be prominent citizens on the platform. This alluded first to the fact that all the clergymen and other prominent citizens occupied seats on the platform, and secondly to the fact that the front of the platform was crowded with boys who had been driven from their seats on the floor of the hall by the immense crowd. The musical program was very choice, and the floral display furnished by Mr. C. E. Skinner of our local greenhouse, supplemented by some of the society members, was exceedingly pretty and inspiring.

Dr. Smith, the society president, first introduced the Secretary, who told in a few words what the society had done so far, and was likely to do for the current year. Besides the plant distribution last spring, $50 worth of bulbs—tulips and hyacinths—has been distributed among the seventy-four members last fall, and in addition to the ordinary plant distribution this spring, one thousand gladioli, purchased from Mr. Groff of Simcoe, will be distributed among the members. This will still leave the government grant, about $50, to be invested in bulbs for the fall.

Dr. Smith being called away, Mr. W. Elliot, B. A., vice-president, took the chair, and called upon Mrs. Torrance as the first speaker. She gave an instructive talk on shrubbing for the lawn, the best shrubs for the lawn, the system and methods of planting, and care after planting. The second speaker was Rev. R. S. Howard of Trinity Church, who gave a very inspiring address on the pleasures and influences of floral culture in and about the home. The third speaker was Mr. R. B. Stevenson, who talked first on verandah decoration, and then on the preparation of soil for pottery plants. So instructive was Mr. Stevenson that some of the audience asked him to talk for a few minutes on strawberry culture for the family table. It was nearly eleven oclock when Mr. Stevenson sat down and the meeting was dismissed with the national anthem, led by Rev. A. McAuly of Knox Church, who, as well as Rev. Mr. Howard, Rev. Mr. Kenner and Rev. Mr. Whiting, is an enthusiastic member of the society.

OUR BOOK TABLE.

*Sylvan Ontario.—It is well that Educationists are considering Nature study as a means of developing habits of observation and discrimination, for there is abundant evidence that such training is needed. We do not expect city-bred people to be familiar with the various trees and shrubs adorning our rural landscape, yet we are fully persuaded that our country-bred are as little able to name correctly the different species of the trees mayhap growing on their own farms. to say nothing of the shrubs.

The appearance of this work at this time is very opportune. It is very creditable both to the enterprise and scholarship of the author. The very modest price places it within the reach of every one. It should be used in the public schools of city, town and country. It should be in every family where the boys and girls can learn to know the distinctive features of each tree and shrub, thus forming an intimacy with nature that will be a source of purest pleasure through all of life.

The text opens with an exhaustive and simple explanation of the terms used in describing leaves in all of their varied forms and peculiarities. This is followed by a leaf index which enables the reader, now become familiar with the descriptive terms, to ascertain the botanical name and the number under which the plant is more fully described in succeeding pages. By the use of the leaf-index and the drawings, in which will be found a typical delineation of every form of leaf, it is a very simple and easy matter to become thoroughly acquainted with the botanical and the common names of all of our arborescent plants. The descriptions given are necessarily short, yet give valuable information concerning each of the two hundred and ten Ontario trees and shrubs.

307 Givens St, Toronto. D. W. Beadle.

Country Life in America for April, if possible surpasses all previous numbers in general excellence. The illustrations are superb, and the reading matter elegant. Nothing equal to this journal has ever before appeared, and the price is reasonable, only $3.00 a year. The publishers are Doubleday, Page & Co,, 34 Union Square East, New York City.

*Sylvan Ontario, a guide to our native trees and shrubs. By W. H. Muldrew, B. A., Dr. Paed , principal of the Graven hurst High School. Illustrated with 131 leaf drawings. Toronto, Wm. Briggs, cloth limp 50 cents, cloth boards 75 cents, leather limp $1.00.

Fig. 2316. The Easter Beurre.

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THE EASTER BEURRE.

AMONG the desirable pears to grow for export we must not overlook the Easter Beurre, which, though green and unattractive in appearance at time of harvesting, keeps well through the winter, is an excellent shipper and is of very good quality. A warm climate and favorable soil seems to be necessary to its best development, and accordingly we find it a favorite shipping variety in the Californian pear orchards. On deep, rich, sandy loam, in the southern parts of our province, it succeeds well, either as a dwarf or as a standard tree ; and it would no doubt be profitable in the commercial orchard.

Although some writers have claimed that this pear originated in France, because some old trees were found near Laval, yet the majority agree that the variety originated in Belgium, at the old University town of Louvain. Van Mons, in his Album de Pomologie in 1847, says, "This variety was found in the ancient garden of the Capucins, at Louvain, where the original tree still stood in the year 1825, under the name of Pastorale de Louvain."

In the old countries, much confusion has existed regarding the names of pears, and consequently much difficulty exists in the identification of varieties ; this pear, for example, is given no less than twenty-four different names in Leroy's Dictionnaire de Pomologie, as for example, Doyenne de Printemps, Canning, Beurre d'Austerlitz, Beurre d'Hiver, etc., the last named being adopted by LeRoy, while Hogg, of England and Downing of America, both adopt the name so well known with us, Easter Beurre.

DESCRIPTION.

Tree, fairly vigorous, upright and productive, and may be grown either as a dwarf or as a standard ; if as a standard it needs good rich soil and a warm climate for the best success. In Great Britain it does not seem to succeed as well as in Canada, for Hogg says it frequently happens that this delicious pear is of an indifferent and insipid flavor, which is caused by unfavorable soil, and Blackmore of Teddington says, "It cracks and spots and is seldom very good." Our experience with it, as grown at

Maplehurst on a dwarf tree, is very favorable.

Fruit, above medium size, irregular obovate ; skin pale green at harvesting time, yellowing somewhat toward maturity, with numerous russet dots, russet patches around the stem and calyx and often a brownish check. Stem, about one inch long, stout, swollen at base, set in a narrow, deep cavity ; calyx small, closed, set in a much plaited basin of moderate depth. Flesh : color white, texture fine, melting and juicy ; flavor, sweet and agreeable.

Season—January to May, under ordinary conditions.

Quality—Dessert, good.

Value—Export, good.

Adaptation—Southern parts of the province.

CHOICE VARIETIES OF GOOSEBERRIES.

BY STANLEY SPILLETT, FRUIT STATION, NANTYRE.

The Question.—*What variety or varieties of gooseberries do you advise one to plant for profit?*

This question has been asked more frequently than any other and is difficult to answer, but, as I have had quite an experience along this line, I will give, in as few words as possible, the conclusions I have come to.

The gooseberry is not a popular fruit and I am satisfied this unfavorable opinion arose from the custom of canning or preserving it green, as we did ourselves years ago.

Nine people out of ten will tell you they have no use for gooseberries. I have asked a good many why they put up their gooseberries green any more than their plums, and the only reason given was "the skin of the fruit becomes tough and disagreeable if allowed to get ripe." This is true of a good many of the foreign varieties but not of our own native varieties.

Large vs. Small Berries.—Growers often say if they were able to grow the large berries they would have no trouble in finding a market. I am certain this is an error ; people do not buy the gooseberry because it is small or large, cheap or dear, but because they fancy they do not like it ; but I have never met a man yet who said he had no use for the gooseberry preserved, but who, if he ate it or was induced to buy a basket of ripe fruit, quickly changed his mind.

Fifteen years ago I sold 20 twelve quart baskets ripe to neighbors, mostly farmers. Three baskets went to Lefroy, one to each store and one to hotel. Every year since, these same people want to get their basket of ripe gooseberries, and the hotel, noted for its good table, takes 3 or 4 baskets. Nearly all these people put in their order a year ahead, for fear they will miss getting them.

Now many of these have tried the large varieties, but, in every case, have pronounced in favor of the medium sized berries such as Downing, Pearl and Red Jacket. One gentleman said "the big berry is no better than the medium berry, and most of our family say not so good, so the only advantage with the big berry is that it can be cleaned a little more quickly." Our own experience is just the same. Year before last we kept all our large berries for our own use ; last year we sold the large and used Pearl and Red Jacket, and in our opinion the smaller berry is the nicer.

Foreign Varieties.—Of the fifty varieties sent to this station from England, fully 40

per cent were smaller than Red Jacket and several were as small as Downing when grown on old black wood and among grass. These foreign berries have very thick skins, so thick that there is very little pulp. Old country people who visit my garden inform me that these small berries are used altogether in the old country for jam making; and that they never saw the large berries used for that purpose. I was therefore prepared to hear from Prof. Beach that the Downing has been introduced into England, and that it is highly prized there for jam making. The largest apples, plums or even strawberries are not always preferred for cooking but often the medium size is preferred if they are nice in color, shape and condition. Now, sir, if you are willing to do as Green of Rochester did, go right out and sell gooseberries direct to the consumer, peddle them if you like to call it so, I advise you to set say 1,000 Red Jacket and 800 Pearl for selling ripe and 500 Champion to sell green for sauce, pies, etc. This advice is of no use to the big grower who piles his fruit into the market. It does not make any difference to him which variety will continue in favor, but you must please your customers, therefore you must know the best quality and supply it.

Money in Them.—Let me say, if I had my life over again with my present experience, I should buy 5 to 10 acres of land within a mile or two of some village, so as to get manure which is the secret of success, and grow strawberries and gooseberries for home market. I began with strawberries as a hobby and the first year I had all I could do to sell $60 worth! Stores took a couple of twenty-four quart crates the first year, farmers took from one to two dozen boxes; but the next year everybody wanted twice as many. I saw that there was a fine opening for someone, so I induced a smart honest laborer with a big family to take it up gradually. He first raised plants and sold a few berries but was stuck for capital, he went into partnership with a young farmer and now they can sell the product of seven acres of strawberries on this little market! Well I know the gooseberry market cannot be expanded like that but I do know that almost every farmer in the township will buy gooseberries at five cents a quart and the working men in the villages will go in for this fruit for canning or preserving as soon as they learn its valne. By this means one or two families in every township in Canada can be supported in comfort and independence. My own family uses a lot of fruit and to-day the gooseberry and plum are our favorites preserved, and I have no hesitation in saying that the gooseberry is ahead of the strawberry preserved.

Red Jacket.—I do not doubt that the big fruit grower can grow the big berries and find a more ready market for a time; but his customers will not be long in discovering what mine discovered, that the big berry cooked is no improvement in quality upon the medium sized berry, and any grower can afford to grow Red Jacket or Pearl for five cents a quart better than the big berries at 8 cents. Red Jacket when properly ripened is certainly the most beautiful berry I ever saw. It does not mildew and need not be sprayed, and is of a clean, bright, pinkish, transparent color. I had just one basket of this variety to spare last year and took it to the store where the campers deal. This was at the end of the season when all were apparently supplied, and the merchant had informed me that no more could be sold. Well this basket was noticed at once and bought up, and orders came in at once. I should just like to see one dozen baskets of well-grown Red Jackets exposed for sale in Toronto beside the biggest berries grown, and see which would sell the best.

NOTES AND COMMENTS.

Canker Worms are at work, and must be killed while small, with Paris green spray, three ounces to forty gallons of water; or with the Kedzie mixture described on page 184.

Codling Moth and Plum Curculio should be fought at once, and the same spray advised for Canker worms is useful if applied as soon as petals fall.

Borers are often very troublesome in an apple orchard that is not growing vigorously. There are two kinds, the Round Headed and the Flat Headed; and the latter is the more common in Ontario, The eggs are deposited in June and July, under the loose bark; and the young worm soon eats its way through the bark, and sometimes girdles a small tree completely. Washes of soft soap, reduced to the consistency of paint by the addition of a strong solution of washing soda in water applied once in June and in July, is a preventive. If the insect is already established, nothing will do but the knife.

The Peach Tree Borer, if neglected, increases in the orchard to such an extent that the trees may be almost ruined by its girdling them. The eggs are deposited on the bark just at the surface of the ground, in the summer season, and the young larva works its way downward, devouring the bark of the root, and causing an accumulation of gum, which often forms in a thick mass around the base of the tree, a sure guide to the presence of this borer. When once it is in the root, the only thing to do is to dig away the earth a little, and to search it out with a knife and destroy it. One of the most convenient preventive measures is to heap fine earth about the trees early in June, and this will prevent the borer from reaching his chosen place for oviposition. Some years ago we had a hard fight with this insect, but routed it entirely in the way above described and have had no return of it since, worth mentioning.

Apple Scab, which has wintered on the bark and old leaves, is now sending out its young spores to fix themselves upon the new leaves and the young fruit. Spraying with the Bordeaux mixture, the preparation of which was described on page 103, March number, will largely prevent the scab from affecting the fruit, if it is kept well whitened with the mixture. Some kinds are especially subject and should be sprayed faithfully, viz: Fameuse, Fall Pippin and Early Harvest. Some other kinds, such as Baldwin, Ben Davis and Duchess, are seldom affected.

The Deutzia Lemoinei, sent out this spring to our members, is a valuable acquisition and when it blooms will be much appreciated by all. The bush is quite hardy, and reaches a height of about three feet; it is a very profuse bloomer, making it a very fine ornamental shrub. The flowers are pure white, with yellow stamens, larger and more showy than those of the well known but smaller and more tender variety D. gracilis. There are several other varieties, as rosea, scabra, crenata, but none so desirable for Ontario gardens as Lemoinei.

Oriental Markets for Fruit.—No one can foresee the unlimited extension of which the export trade in North American fruits is capable. The obstacles that have hitherto

hindered, will soon be so entirely overcome that we shall no longer see a glut of good fruit, no matter how excessive our crop ; for always some other part of the world will be eager to swallow up our surplus, providing it is accessible.

Our own great Northwest is opening up a vast market for our grapes, which are so unpopular in England, and likewise for our excellent plums, which can be grown along our lakes in such quantities. Germany, France, Russia and Austria, all want our fancy high colored apples ; Scotland and England want our fine pears ; and now even the Orient is beginning to ask for our apples. This latter statement is based upon the following report by United States Consul Miller, at Muchwang, China, concerning fifty boxes of apples sent from Portland, Oregon, on September 28th, 1901, and which reached China November 10th, in good shape, and every box arrived intact. The percentage of loss was greatest with the Red Russian variety (75 per cent), and least with the Ben Davis (2 per cent) ; the Spitzenberg lost 10 per cent, the Shannon Pippin 25 per cent, and the Jonathan 50 per cent. California ships a quantity of third-grade yellow Newtons to China.

"Some of these," says Mr. Miller, "are consumed by foreigners, but most of them go to the Chinese fruit stands and restaurants and are eaten by natives. The Chinese appetite for fresh fruit is strong, and apples are in great flavor ; the only obstacle to the creation of a large market is the inability of the masses to purchase. The average Chinaman does not distinguish the different varieties of apples, and if inferior grades could be sent at low rates an extensive outlet could be created.

"Northern routes are the best for shipping green fruits. All shipments of apples for the northern ports of China should be sent by Oct. 1, on account of the danger of freezing if they arrive late in the season. If the fruit reaches North China in good condition, it will keep well on account of the dry, cold climate. The presence of the Russians in Vladivostock, Port Arthur and Dalny will increase the market for our apples, as the Russians like this fruit very much."

THINNING FRUIT.

If present appearances are at all indicative of the season's crop, there will be a phenomenal yield of almost every kind of fruit. Peach, apple, pear, cherry and plum trees, all seem to be competing to see which can make the best showing, and if one half the fruit were to hang until mature, our orchard trees would be exhausted for years to come. We therefore warn our readers to be on their guard against such an evil by thinning the fruit most carefully.

Effect on Peaches.—Experiments made at Maplehurst, during the last few years, have clearly proved that thinning of peaches very much increases the size of the fruit, gives it more color, largely increases the quality of No. 1 fruit, and in some cases increases the total number of baskets harvested. In some cases it was found to increase the net income in cash for the trees thinned, over those not thinned.

Effect on Plums.—Experiments made at the Wisconsin Experiment Station seem to prove that equally good results may be had from thinning plums, as we have had with peaches. About four-fifths of the fruit was removed from a portion of a tree of Gale Seedling plums, leaving the fruit about two inches apart on the branches, shown in Fig. 2317 ; while the other branches are left untouched. The increase in size is quite evident in our illustration, which is taken from a photograph.

Effect on Apples.—While the results in the case of apples may not be so clear as with peaches and plums, still the effect on the tree is no unimportant factor ; for when our

FIG. 2317. PLUMS THINNED AND UNTHINNED COMPARED.

orchard trees overbear, as they did in 1896, it takes three or four years for them to fully recover their vitality. Indeed, if one may judge from evidences, it is only this year of 1902, six years after that enormous exhausting crop, that our apple trees have recovered their wonted vigor!

The Massachusetts Station has reported on results of thinning apples, as follows:—

A tree each of Gravenstein and Tetofsky apples was thinned on July 1st, and a similar tree of each variety left unthinned as a check. In case of the Gravenstein, the yield on the thinned and unthinned trees, respectively, was first quality fruit, 9 bushels and 2½ bushels; second quality fruit, 1 bushel and 2½ bushels; windfalls, 9½ bushels and 10½ bushels. In the case of Tetofsky the thinned trees gave 1 bushel of windfalls, and the unthinned tree 3 bushels; of second quality fruit, the yield was one-half bushel from each tree; and of first quality fruit the thinned tree yielded 2 bushels and the unthinned tree none at all. Allowing 60 cents per bushel for firsts and 25 cents per bushel for seconds, the market value of the thinned Gravenstein apples was over twice as much as that of the unthinned and of the thinned Tetofsky apples eleven times as much as that of the unthinned. It

cost 48 cents to thin the Gravenstein and 25 cents to thin the Tetofsky. The net gain due to thinning was 85 cents for the Tetofsky and $1.85 for the Gravenstein. It is thought that the results would have been more pronounced if the thinning had been done two weeks earlier. The large percentage of windfalls in case of the Tetofsky was believed to be largely due to the fact that the apples have very short stems and are borne in clusters of from three to eight fruits each, so that as they grow they become very much crowded. With trees having this characteristic, therefore, thinning is especially valuable.

Absurd Statements.—The New York Fruit Trade Journal, after speaking of the superiority of American over Canadian fruit packing, is further responsible for publishing the following paragraph as part of a speech by Michael Simons, of Glasgow :

The question of selection or grading is also one of importance, even with honest packers. We say 'honest' packers, for it is regretful to say that there are men who are actually dishonest ; and to such an extent did false packing obtain in the Dominion of Canada that the Legislature has thought fit to pass a special act making false packing a criminal offense, with special penalties, including the possibility of imprisonment attached to it.

There are various methods of resorting to this false packing in order to deceive the unwary. What is called stove-piping is supposed to be the most general, the modus operandi in connection with which is something as follows : A barrel is taken and the bottom of it layered with a few good apples put in in perfect regularity. A stove pipe, the circumference of which might be about half that of the barrel, is then introduced into it. Apples are then poured in round the stove pipe, reaching up to the chime. Then the inferior apples are poured into the hollow space in the stove pipe. When it is filled up, the pipe itself is removed, the result being that all the rubbish is in the center of the barrel, where it is difficult to observe it. The top, bottom and sides are comprised of good fruit. The packing is then completed in the usual way, a special press being used for the purpose, in order to insure the impossibility of movement, which at the outset we spoke of as the chief desideratum.

This statement is too absurd to contradict. We venture the assertion that Mr. Simons never saw an instance of such packing as is here described. If, as our contemporary infers, Canadian packing is inferior to American, how is it that Canadian Baldwins always bring a higher price in Liverpool than American Baldwins ; and is not the fact of our passing a fruit inspection Act rather a proof of our intense desire to do honest work, than an evidence of our dishonesty ? Such a paragraph is most unfair and unjust.

The Spring Frost.—Nearly every year, toward the end of May or early in June, we are alarmed at the serious danger to our fruit crop from frost, and very often we lose a large part of our cherries and strawberries in realization of our fears. This season our spring began early in March, and the fruit buds were unusually advanced the first week, 9th of May, when a period of cold came which lasted three days.

In the most favored sections, near the lake, the temperature was down to 30°, and in many places much colder. At first the usual peach scare prevailed in the Niagara district, but the damage is less than was anticipated. The petals of the cherries are frosted, but the young cherry, hidden and protected by them, is found to be quite uninjured ; the strawberries which were formed are blackened and spoiled, but there are plenty still to come to make an average crop.

Injurious Degrees of Cold.—Hammon gives (1896), a table showing at what temperature plants are liable to receive injury from frosts, from which we cull the following as being those more interesting to us in Ontario :

Fruits.	In Bud.	In Blossom.	In Setting Fruit.
Apples	27°	29°	30°
Grapes	31	31	30
Peaches	29	30	30
Pears	28	29	29
Plums	30	31	31
Strawberries.....	28	28*	28

*In our experience, strawberries in blossom are injured at 30°, and we think in this particular he has given them more credit for hardiness than they deserve.

The Codling Moth is one of the worst enemies of the apple grower, and every year the percentage of wormy apples in untreated orchards is increasing. We have known instances where fully one-half of the crop was wormy and the affected apples were otherwise the finest of the fruit. Since only about thirty days elapses between the deposition of the egg and the appearance of the adult moth, it is evident that we have in Canada at least two broods in a single season, and farther south there are three and sometimes four.

Now a man with a small orchard will try and keep down this worm by poultry and stock, but for the large orchard, faithful spraying with Paris green (4 ounces to 50 gallons of water) is about the best treatment. It is an expensive job, and for this reason many neglect it and their orchards become breeding places of worms to ruin their neighbor's fruit. When neglect of spraying is general, the work of keeping one's own orchard clear is almost hopeless, but if the work be at all general, one may spray with the more confidence of success. The first spraying should be within a few days after the blossoms fall, and should be repeated several times at intervals of about a fortnight, if one is determined to succeed.

FIG. 2318. WORK OF THE CODLING MOTH.

Shelter For Strawberry Plantation.—On page 126 some reference was made to the beneficial results to plants from night shelter, and now we notice in the April number of the Southern Fruit Grower, a record of excellent results from covering a strawberry plantation with thin muslin, from the time the berries begin forming until picking time. Protection of this kind was estimated to increase the crop fully fifty per cent., to largely increase their size and to make them earlier in ripening. Notwithstanding that the cloth hung limp and close over the blooms, yet pollenization was absolutely perfect, because the confined air, laden with pollen, reached every blossom.

Possibly this protection more nearly resembles nature's wild strawberry garden, where the vines have semi-protection from grass and wild plants, in fruiting season.

In fastening the cloth, stakes were used, projecting six inches above the ground, through the upper end of which a gimlet hole was bored, and a six inch piece of small soft wire run in, of which one end was twisted about the stake, and the other bent into a hook to hold the cloth, set one and one-half yards apart in rows less than three feet apart.

Canker Worm.—This is a troublesome enemy of the apple tree in some sections of Ontario, and if neglected, will quickly increase to such an alarming extent as to threaten the life of the trees. The first evidence of its work is the perforation of the leaves with small round holes, which gradually increase in size until nothing but skeletonized leaves remain, and the trees look as if scorched by fire.

These worms were very bad around Bur-

lington Bay and in the Niagara District last year, and seem to be gaining ground year by year, owing to neglect of proper remedies. One of the most reliable preventive measures is suggested by a study of the insect itself. The male moth is winged, but the female is not winged and therefore must climb the trunks of the trees to deposit its eggs.

Therefore a tree protector of some kind about the trunk will effectually prevent the eggs from being deposited upon the tree above it, or the worms from crawling up if hatched out below. Bands of heavy paper tightly fastened around the trunk and besmeared with some sticky substance, such as coal tar or printer's ink, will serve the same purpose. Some report using a mixture of 3 pounds of resin to 2 pounds of castor oil, melted together and applied directly to the trunk of the tree. The writer tried sticky bands in his own orchard some years ago, and succeeded in completely routing the worm, hundreds of females being caught fast trying to walk through a sticky bandage of coal tar. There are two species of Canker worms, Anisopterix vernata (the spring canker worm) and A. pometaria (the fall canker worm) so that one must be vigilant both in spring and fall, and the bandages should be applied toward the end of October, and kept sticky until about the 1st of May.

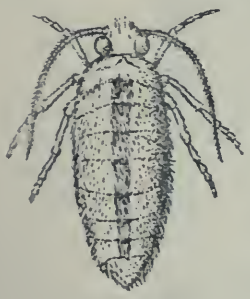


FIG. 2319. FEMALE MOTH OF CANKER WORM.

The common remedy, spraying with Paris green at the rate of one pound to 150 gallons of water, is effective if applied while the worms are very young, but, if delayed until the worms are even half grown, it is not very effective. A better remedy is the strong solution of white arsenic known as the Kedzie mixture, which was given on page 184 (May No.). Prof Kedzie used 2 lbs. white arsenic, 4 lbs. sal. soda and 2 gallons of water. This was boiled until the milky color disappeared, showing that the arsenic was dissolved. Then 1 pint of this was added to 40 gallons of water. The addition of 2 lbs. of lime to each barrel of this mixture made the arsenic solution insoluble and less apt to scald the foliage.

The Georgian Bay Fruit Growers' Association seems to be a most active and enterprising society. That they mean business is evident from the work undertaken, which may be classed under such heads as, cooperative buying of baskets; pumps and material for spraying; uniformity in methods of cultivation, pruning and packing; cooperative shipment and sale of fruit. At Montreal a special forwarding agent for the Georgian Bay packages of fruit is retained during the shipping season, who will report the condition the fruit arrives in Montreal, the manner in which it is handled and placed on shipboard. The secretary is Mr. Fred. Marsh, whose ambition is to make the Georgian Bay brand hold the top place in the market.

Spraying Demonstrations.—Actions speak louder than words, even in horticulture, and the man who can do a thing as well as tell about the doing, is the man who is needed these days. Secretary Creelman writes that he has engaged Messrs. McNeill, Carey and Lick for spraying demonstration meetings to be conducted in connection with the local fruit growers' associations in the various parts of the province.

FIG 2320. LUTHER BURBANK.

MEN WHO HAVE SUCCEEDED—III.

LUTHER BURBANK.

The Wizard of Horticulture—Wonderful Results of Hybridization.

"If little labor, little are our gains;
Man's fortunes are according to his pains."

For some years past the name of Luther Burbank, of Santa Rosa, California, has been familiar to fruit growers the continent over, but it was only recently that we have been able to trace anything about the person behind the name, when Prof. Wickson, of California, in a monthly journal called "The Sunset," gave us a beautiful sketch of "The Man, His Methods, and His Achievements."

Our young readers, who wish to become horticultural experts, can study no biography that will be more suggestive of useful enterprise than that of our subject, for his work has been one of real and honest effort to do and be, rather than to get and seem to be.

There is no line of scientific and at the same time practical horticultural effort that brings greater good to fruit growers than that of hybridization, and the production of new and valuable fruits, and yet how few of our horticulturists have the patience needed to pursue this work. The celebrated M. P. Wilder, of Boston, is said to have always carried with him a pair of nippers and a camel's hair pencil, and a piece of netting, and his great pleasure was to nip out the stamens of the flowers of one fruit, and with his camel's hair brush touch the pistil with the pollen dust from another. Then he would tie the fertilized bloom in the netting to prevent insects bringing other pollen, and wait patiently for the time when he could plant the resulting seeds, and so originate some new and valuable hybrid. This work takes years, it does not always pay in hard cash, but it brings more lasting reward to him who thus works in the interests of his fellows.

Luther Burbank was a Massachusetts boy, born in 1849, with no especial chances of success. He was slight of build, retiring in disposition, but even as a child he showed a love for plants by making a doll of a cactus plant, and grieving deeply over its loss. At school he lacked confidence enough to speak before his comrades, but he was gifted in composition, and succeeded in making a bargain with his teacher to accept essays in place of declamations.

It was while reading an agricultural paper that he noticed the need of an improved variety of potato, and set himself the task of producing it. His efforts were successful and he gave the world the Burbank. Concluding that California offered him a good opening to carry on the plant and seed business, which he had taken up, he removed there in 1875, with little stock in trade except ten Burbank potatoes, which he had reserved when he sold out the stock to a Massachusetts seedsman, and these helped to give him business standing in the new country.

After some ten or twelve years Mr. Burbank found that his time was too much divided, and that he must concentrate his whole time upon his chosen life work, the production of new varieties, and in 1893 he published the first of that notable series

of announcements, which he called "New Creations in Fruits and Flowers," and which has interested so many people in his wonderful productions.

The Burbank home is very humble, less pretentious even than his greenhouse or barn adjoining. Here, on four acres of ground, most of his work is done, an example truly of intensive culture. The beds of plants about the house are collections for working purposes; in one of them, for example, there are forty varieties of golden rod, set there for the express purpose of studying their habits of growth and of bloom.

Santa Rosa is a town of about nine thousand inhabitants, and here Mr. Burbank has lived during a decade of years with his aged mother. The home is small, and there are no attempts at display of any kind, no special show plants, no laboratory, no medals or diplomas, no special library, and yet this man is widely read, he is abreast of the times, indeed in his own work he is in advance of any books.

Modest worth certainly is one of his characteristics, and so rare is this trait, that we look upon such a man with surprise and find it hard to understand how he can place the doing before the reward, and forget the dollar in the effort to bring about some great and good result of his labor. But such a man is Mr. Luther Burbank, and the work he is doing is of such scientific and expensive character that most persons would at once seek the aid of the state or of some millionaire; but he, in carrying it forward, has asked no favor, he loves his work, and the reward comes in the doing.

A Boys' Institute.—Quite a new departure in the education of boys has been made by Mr. C. J. Atkinson, Supt. of the Broadview Boys' Institute, Toronto. This gentleman has a class of city boys, a number of whom have signified their intention of becoming farmers. He has secured a plot of land and is giving each boy a portion of it upon which to set different plants this year, each one for himself. In consultation with Mr. C. C. James, the following programme of lectures has been drawn up:

Agriculture and Nature Study, Lecture Course, Season 1902—

1. May 5—Introductory, G. C. Creelman, Ontario Dept. Agriculture.
2. May 12—"How to Make a Vegetable Garden," John Barton Weston.
3. May 19—'How to Make a Flower Garden," Wm. Tyrrell, Toronto, Pres. Horticultural Society.
4. May 26—"Seeds and Seedlings," Prof. Lochhead, Guelph, Ontario Agricultural College.
5. June 2—"Relation of Plants to Soil and Air," C. C. James, Toronto, Deputy Minister of Agriculture.
6. June 9—"Insect Life," W. N. Hutt, Southend.
7. June 16—"Our Birds," C. W. Nash, Toronto, 108 Waverly Road.
8. June 23—"Poultry," Poultry Manager Dentonia Park Farm.

June 28—"Poultry," Poultry Manager Dentonia Park Farm.

9. Aug. 4—"Nature Study in Parks and Gardens," Principal Scott, Normal School, Toronto.
10. Aug. 18—"A Tree," Thos. Southworth, Division of Forestry, Toronto.
11. Sept. 1—"Farm Animals," J. B. Ketchen, Director of Dentonia Park Farm.

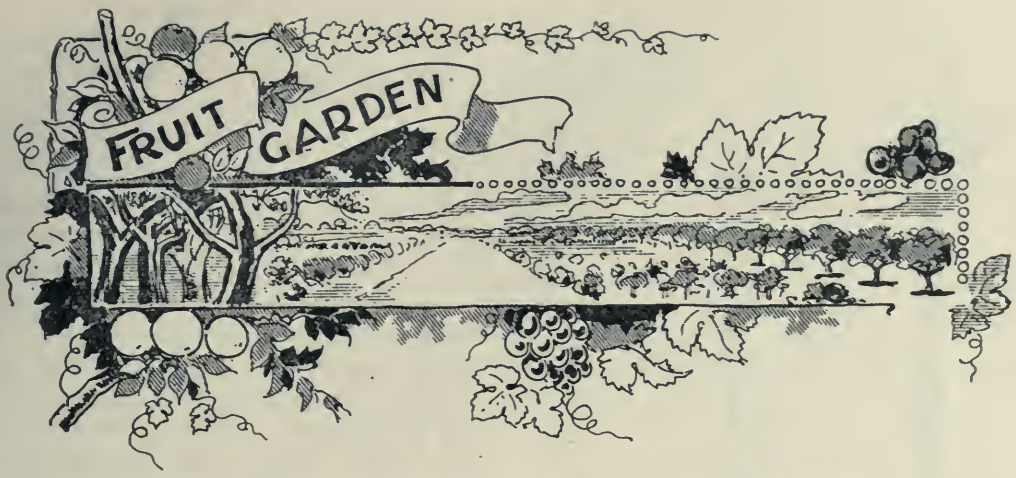
Sept. 6—"Farm Animals" at Dentonia Park Farm, J. B. Ketchen, Director of Dentonia Park Farm.

12. Sept. 15—"Flowers and Fruits," L. Woolverton, Grimsby, Editor "Canadian Horticulturist."

This institute is interdenominational and has Lord Strathcona as Hon. President. It includes many departments of work, classed under four divisions, viz.: Mental, physical, spiritual and social, and will surely be a source of great inspiration to boys who are choosing their life work.

The first of the series of lectures has been given by Secretary Creelman. It was quite an inspiration to see the eagerness of the boys, who listened for over an hour and a half as Mr. Creelman told of the making of the soil, and of the wonders of insect life.

We will watch with interest the carrying out of Mr. Atkinson's scheme and wish him every success in his work.



SOME PECULIARITIES OF FRUIT SPURS.

BY H. L. HUTT, PROFESSOR OF HORTICULTURE, O. A. C., GUELPH.

In the last two articles I dealt at some length with those forms of branches commonly known as fruit spurs. The importance of a thorough understanding of these, and the many erroneous ideas concerning them, is my excuse for again reverting to the subject. Only last week I received a letter from a correspondent who has been observing some of these for years, which shows something of the general lack of knowledge concerning such things, not only by men who care for trees, but by those who are expected to give information to others about them. In the course of his letter, he says:

"Five years ago I noticed, when pruning the Ben Davis apple trees, a small knot or bunch on the branches. Now it is spreading all through the Ben Davis trees. I send by this mail a sample of the knots. A question concerning them was asked at our last Farmers' Institute meeting, but could not be answered. I pruned 20 young Ben Davis trees last week, and, if this disease keeps on spreading, I think the trees should be destroyed."

I was, of course, pleased to inform him that such drastic measures were unnecessary, as this was not a disease, but a natural result of the fruiting of the tree.

The accompanying illustration, which is about three-quarters of the natural size, is made from a photograph of some of the knots in question. At the beginning, we may say that the swellings are more noticeable in the Ben Davis than in most other varieties of apples, although they are often quite common in pears.

They were at one time supposed to be something of the nature of a reservoir for the storing up of nourishment for the development of the fruit, but careful investigation has shown that this is not the cause. Prof. Bailey, in his Pruning Book, says: "They are swellings resulting from the strain of fruit bearing, and are not to be looked upon as conducing in any way to subsequent fruitfulness." A little study of the annual growth in fig. 2321 shows the correctness of this theory, and may help to a better understanding of the formation of such branches. Beginning

FIG. 2321. BEN DAVIS FRUIT SPURS.

at the end of the branch, we see about one inch of last year's growth, and it has at its extremity a good plump fruit-bud which will blossom this spring; and, if all goes well, should bear fruit. There is, as yet, however, no such swelling upon it as that which appears on the growth of 1900 just below it. In 1900 there was only a little over half an inch of growth, but at (a) is a large scar showing where an apple was borne that year; and, as a result, we see the large swelling of the spur at that point. In 1899 an unusually long shoot was produced, but this may be partly accounted for by the fact that the branch did nothing else that year, as there is no sign of there having been fruit. In 1898 there was only about an inch added to the length of the spur, but that year it had a good sized apple, as shown by the large scar at (b); and here again is another swelling. In 1897 the branch not only bore fruit, but it made very little new growth, which may be seen by the short piece between the swellings above and below. 1896 was another fruitful year, and the spur then terminating at (c), made an effort to bear two apples, but, for some cause or other, they failed to reach maturity, as shown by the two small scars at that point. They must, however, have reached a considerable size, as evidenced by the swelling of the spur below them. Below the ring at the base of this lower swelling we see the long growth of wood made in the year 1895.

The small shoot terminating at (d) has been six years in making its inch or more of growth, as may be seen by counting its rings. It has been outgrown by its more vigorous neighbor, and will after a time cease growth unless an accident should happen to the main branch, which would check growth in that direction. About three years ago it made an effort to bear fruit, but its effort was in vain, as the little scar at (c) shows that it could have done little more than blossom.

To summarize, we have in this small branch seven seasons of growth; the bearing has been in alternate years; four attempts have been made at fruiting, two of which have been successful, and two have failed; and at the end of the branch is a well-developed fruit-bud which promises well for fruiting this season. At each point where fruit has been borne, there is an enlargement of the part due to the addition of woody material, no doubt for the purpose of strengthening the spur to support the weight of the fruit.

ORCHARD CULTIVATION.

BY W. H. COARD, L. L. D., DEPARTMENT OF AGRICULTURE, OTTAWA.

It has been only within the last ten years or so that spraying has been regarded as an important part of successful fruit culture. Recognizing the value of anything that would prevent injury to trees and fruit, spraying has received considerable attention at the Central Experimental Farm, and many fungicides and insecticides have been tested to prove their relative merits. While experimenting with a lime mixture sprayed on fruit trees to prevent the swelling of the buds in early spring, Mr. W. T. Macoun discovered that the trees thus treated were practically rid of the oyster shell bark louse, an insect which does a great deal of injury to apple trees in the colder parts of Ontario and the Province of Quebec. The lime destroys the gelatinous matter which binds the scales to the tree, and the scales are then removed by the action of rain, frost, or wind.

In order to be most effective the spraying should be done in the autumn, and there should be two applications so that all the scales may be covered. Lime used in the proportion of two pounds to one gallon of water has been found to be the best formula so far, but it is possible that one pound of lime to a gallon will be sufficient if the lime be good. This new remedy for the oyster shell bark louse is simple, cheap, and very effective, and should prove a popular one. There is, in fact, no remedy so good, economical, and unfailing as this for the oyster shell bark louse.

Kerosene emulsion has been usually used for this purpose, and with good success when the insects are running, but as they only run four or five days in the first week in June it is difficult to kill them all off in this way. By covering the trees with lime you are able to get at the scale, and the lime makes the trees white, so that you can see whether all the scales have been covered or not.

The advantage of clover growing in an orchard in the fall is that much of the plant food in the soil, which has been liberated and made more easily available by the constant cultivation during the early part of the summer, is prevented from leaching by being used by the growing plants, the clover thus becoming a "catch crop" as well as a cover crop. Where soils suffer from lack of moisture in a dry time, the clover should be plowed under as early in the spring as the land can be worked, and cultivation should be begun at once. This will conserve much of the moisture which would otherwise be transpired through the leaves of the growing plants until they are plowed under towards the end of May, which is the usual time. If the soil, however, always contains plenty of moisture, it would be better to let the clover grow until about the third week of May, as there would be additional humus and nitrogen obtained by this method.

Many orchards have been neglected so long and have reached such an age that it would not be profitable to attempt to renovate them. The best plan in such cases is to plant young trees. On the other hand, there are many orchards where the trees, if cared for, would be in the prime of life, and neglect is the only cause which prevents profitable crops

from being grown. It is of orchards such as these that a few suggestions are here offered as to how to bring them back into good condition. But the results desired cannot be got in one year.

The trees, to begin with, should be pruned, not too heavily at first, but enough limbs should be taken out to open up the top and permit a free circulation of air and the admission of sunlight to it. The trees will, probably, be much moss-grown, and both they and the fruit may be affected with various diseases. Injurious insects, too, are almost certain to abound.

Spraying should be begun early in the season, and the trees should be kept covered from top to bottom with Bordeaux mixture and Paris green until the fruit is almost fully grown. Scraping the trunks and large branches of the trees may be done if there is much moss, but as soon as the tree becomes more vigorous, and air and sunlight are admitted, much of the moss will disappear. If the oyster shell bark louse, or other scale insects infest the trees, they should be sprayed with the lime mixture, or other materials already mentioned.

As the orchard, if neglected, is almost certain to be in sod, the soil should be plowed shallow in the spring, turning under a good dressing of manure if it can be procured. If the sod is not too thick it might be worked up with the disc or be kept thoroughly harrowed until July, working in other fertilizers if the land be poor and manure is not to be had; and then red clover seed sown at the rate of twelve pounds per acre, and the ground rolled. A good cover crop should then be formed by autumn. This would conclude the first season's work. The results would, probably, be a greatly increased vigor in the trees, and the fruit, though, perhaps not plentiful, would be cleaner.

The second season additional but less pruning should be done, the trees kept sprayed as before, the clover plowed under in the spring, and the land kept harrowed or cultivated until July, and then seeded down to clover. The fruit should be better than the year before; but not until the third year should the trees be expected to bear heavily and the orchard be in good condition.

A PLEA FOR OUR HAWKS AND OWLS.

BY W. N. HUTT, SOUTHEND, ONT.

John Bunyan, the immortal dreamer, pictured the life of man as a continuous warfare. Perhaps to no class of men is this more applicable than to the modern Canadian horticulturist. The orchardist, the gardener, the florist, with engines of destruction , have just been hurling deadly tonics into the atmosphere, and now are laying mines for unseen foes and preparing for the devastating hordes of the future.

The husbandman of the soil seems to be at war with all nature. Or is it nature? Is it natural that the codling moth should destroy all our apples, the tent caterpillar strip all our orchards, or the potato beetle ruin all our potatoes? In a special degree, can it be natural that a pernicious scale should threaten our whole fruit industry, or a destructive fly drive our staple product from the market. It may be harsh, yet it is natural, quite natural. Na-

ture intended that the insect should live on the plant and the bird upon the insect, the fungus upon the green leaf and the parasite on the host-plant. She grants immunity to the apple tree growing in Canadian forests and to the potato struggling for life in the wilds of Virginia, but she refuses to protect forests of fruit trees or extended plantations of potatoes. By extensive planting of any one species of vegetation we disarrange nature's equilibrium and against odds we must maintain the balance ourselves. By adding acre to acre of any crop we increase the feeding ground of insects that live upon that crop, and of course they increase accordingly. But the question consequently arises, Why do birds not maintain the balance of nature and protect our gardens and orchards? They would do so if allowed, but sadly reduced in numbers they are quite unable for the task. Our native birds of late years are becoming alarmingly scarce. Decimated by the gun of the bird collector, driven out by the English sparrow, and robbed by the thoughtless small boy, birds are now scarcely a factor in the problem of crop protection. One is forcibly reminded of the fact at this time, in seeing birds returning from the south. Where are our old friends, the lovely blue bird, the old-fashioned phoebe, and the once ubiquitous barn swallow? We deplore their depleted numbers, and must ourselves do their work of destroying noxious insects and protecting our crops.

There are, however, worse injuries to trees than having their foliage eaten off or their fruit injured. Mice may in a few days in winter so girdle trees that they are completely ruined. Spraying, if carefully persisted in, will control insect pests, but over rodents working under winter snows we have little or no power. This spring, from Essex to Ottawa, complaints are heard of great destruction to trees by mice. Thousands of nursery trees have been destroyed, hundreds of orchards partially or totally ruined, and even vineyards are reported as suffering. This too is a very natural result of a natural cause. Our rapacious birds, the hawks and owls, which live chiefly on mice and other rodents, have become quite scarce. Hawks are not nearly as common as formerly, while owls are scarcely found except in museum cases. In suffering from this plague of mice, the orchardist is paying for the destruction of our rapacious birds. It seems almost a waste of time to take good care of an orchard in summer only to have it girdled and destroyed in winter. We would not by any means disparage spraying, or other means of protecting trees, but it seems that it would be wise to give more attention to the cause of the trouble.

By accurate examinations of their stomach contents, it has been found that rapacious birds are most useful, in spite of some small birds killed or an occasional chicken taken. Instead of running for a gun when a hawk or owl is seen, it should be protected in every way. It is deplorable that when a flock of northern snowy owls visit our shores it should be pursued till all are turned into bird mummies. The most practical thing that could be done for horticulture is the jealous protection of all birds, and particularly those of rapacious habits. Our boys should be taught their great value, and shown that during resting season birds should never be molested. If hunting were done with camera instead of with gun, the pleasure and profit of the chase would be increased, and the whole country would rejoice at the decrease of injurious pests and the increase of native birds.

RECLAIMING A BARREN ORCHARD.

Cultivation and Spraying Effect a Most Wonderful Improvement.

People ask if there is any help for the old orchard. The problem of the renovation may or may not be a simple one. The mere statement of the conditions of an orchard would seem to suggest the solution. Still there may be local causes for unfruitfulness that may not be apparent. Perhaps the conditions may be such that renovation is impracticable. These questions have to be taken into account.

A simple story of experience may have its lesson. In my possession are several small apple orchards, aggregating twenty acres. The soil varies from a light drifting sand to a somewhat heavy clay. The lighter sand is leachy and the clay is tough and cloddy. A small part of these orchards had been pruned, sprayed, tilled, and fertilized in an experimental way for several years, with very satisfactory results. Another part, before it came into my possession, had been used for hay, pasture, and various farm crops. Farm manures had sometimes been used, and the soil—a moist, sandy loam—was considered to be fairly good. The trees had received little if any pruning, and they were very thick and bore many dead branches. Although most of the trees were twenty-eight years old, the largest crop on the three acres in this plot previous to the adoption of the improved methods was about thirty bushels, mostly culls. The larger part of these orchards was covered with grass and weeds, and while in this condition many trees had been killed by being girdled by mice. No manure had been applied since the two were set. It was supposed that the barrenness of the orchards was due mainly to the impoverished soil.

In the spring of 1894, these orchards for the first time were all brought under a uniform system of treatment, which has continued until the present time. The trees have received moderate annual pruning, and the heads have been retained as low as possible, merely training high enough to permit the teams to pass under the limbs, the ends of the pendant branches being cut back to the desired height. Trees have also been removed when found to be encroaching on those neighbors which were designed to remain permanently, and spraying mixtures have been applied to keep the insects and fungous diseases under control. The spraying is done just before the flowers open and twice after they fall, and the material used is Bordeaux mixture and Paris green. The soil has been shallowly plowed, and well fitted as early in the season as conditions would permit, and it has been thoroughly tilled until midsummer for the purpose of conserving the moisture.

Cover crops have been sown, although not always with satisfactory results. The simple statement of the bare outline of these practices may make a little impression on the reader, but they are nevertheless the fundamental means of bringing old orchards into profitable condition.

Feed them by improving the soil.

Keep them healthy.

Prune.

Save the moisture.

Add humus to the soil by means of cover crops.

Then wait.

In the beginning mineral fertilizers were used on all the orchards, except certain rows which were reserved as checks—for experimental purposes—in that part of the orchard that had never been manured. As the expected benefits from the use of these fertilizers did not appear they were gradually abandoned except on certain rows near the check rows, upon which the use of the fertilizers has been continued up to the present time for experiment.

The results of this fertilizer experiment have thus far been entirely negative, and it has been valuable chiefly in emphasizing the importance of certain other factors in the renovation of these orchards. It is shown conclusively that the mineral elements were not deficient in this soil, and if they were not formerly available it was probably due to the poor soil-conditions, and to a lack of a regular and abundant supply of moisture. Improved soil conditions and the increased supply of moisture have rendered these elements more available, and the healthy leafage—due largely to spraying—enabled the tree to make profitable use of them.

The greatly increased vigor and fruitfulness of these orchards, continued through a term of years, furnish very convincing evidence of the value of these methods—good tillage, cover crops, pruning, spraying. While it may be possible under other conditions to pursue quite a different course with favorable results, yet the objects to be attained must be essentially the same under all circumstances. The tree itself must be protected from its enemies, and food and moisture must be abundant and available, the leafage must have sufficient exposure to sunlight, and the fruit must be protected from parasitic injury.

Perhaps no better testimony in regard to the results can be presented than a statement of the actual amount of fruit produced during the six years, beginning with 1895, the year following the adoption of these methods, and including three "bearing" and three "off" years. The total amount of fruit sold during that time was 35,672 bushels—an average of nearly 6,000 bushels per year—the smallest crop being about 3,000 bushels. Of the total amount 78.5 per cent., or 9,337 barrels, was classed and sold as No. 1 fruit.

Further evidence of the effectiveness and value of these methods is found in the fact that the farmers of the vicinity have almost without exception adopted them, and are practising them more or less thoroughly, with a very marked increase in the health and productiveness of their orchards.—Willis T. Mann, in Country Life in America.

W. H. BUNTING, St. Catharines, writes to the Sun:

The cherry crop is somewhat in doubt; trees blossomed well, and it is thought that the very early and late blooming sorts will show fair crops, while midsummer kinds are seriously injured by the frost.

Peaches and plums are in somewhat the same condition, some varieties in some localities having escaped injury, while in other cases the damage is quite serious, more especially with regard to the Japan plums and the yellow fleshed peaches of the Crawford type.

The opening buds of the grape were in some cases cut off to the extent of 50 per cent., but as the season is early it is probable that beyond reducing the crop to a moderate degree, unless further injury from rot or mildew follows, there will be a fair crop of this valuable fruit. The area under grape culture is rapidly increasing.'

It is a little early to speak with any degree of assurance regarding the apple and pear crops, but present indications point to a large production of these standard fruits.

SPRAYING DEMONSTRATION.

FIG. 2322. SPRAYING DEMONSTRATION BY G. E. FISHER, AT GRIMSBY.

Mr. George F. Fisher, Provincial Inspector of the San Jose scale, has his hands full in explaining to fruit growers the best methods of treatment. In an interview on the 30th April he said the scale was rapidly spreading, and it was evident it had come to stay. At first it had been said that the scale could not endure our climate, but it was breeding faster in Canadian orchards than in those farther south, perhaps because the predaceous insects which were able to keep it in check were less hardy than the scale.

Individual Work, Mr. Fisher says, is the only hope for the fruit grower, for there are always a few careless men who will neglect their orchards, and no law can compel such men to do thorough work.

What shall we do with our big orchards of large apple trees when the scale gets into them?

It will be no light task, said Mr. Fisher, should scale once appear in them as it is sure to do sooner or later. You will have to construct a high frame work on your wagon, with a platform for one man to reach the tops of the trees while another works from beneath. Every tree will have to be treated annually, before the foliage appears in the spring, and it will be a very considerable expense. Mr. McCardle, of St. Catharines, says spraying will cost him $400 to $500 this spring, treating his peach orchards for the destruction of San Jose scale.

It is the aim of the Department of Agriculture to encourage those who are willing to help themselves in ridding their orchards of this dreadful plague. My aim is to put every man in a position to care for his own orchard, so in time the industrious man will prosper, while the careless fruit grower must "go to the wall."

Are township inspectors compelling treatment?

They have the power to do so, if the township backs them up in such a course. Saltfleet Township Council has appointed fifteen inspectors, who are already at work. Only yesterday I visited them, furnished them with hand glasses and gave them full instructions. They mean business. I have done the same with the two inspectors appointed by the Township of Grimsby. I am advis-

FIG. 2323. MAKING FISH OIL EMULSION AND BOILING LIME, SULPHUR AND SALT MIXTURE, AT ST. CATHARINES.

ing the inspectors to keep a record of every orchard inspected, showing the number of trees of each fruit, the number treated, the results, etc., so that we may work the more intelligently in future.

Crude Petroleum will kill not only cherry aphis but also the larvæ from all overwintered eggs as well as insects that have wintered alive on the tree. I am now using a crude petroleum emulsion which is good, and it may be applied with an ordinary pump, although a good agitator is desirable. I have used such an emulsion, made mechanically with the pump, with good results on peaches.

This crude oil emulsion is prepared as follows: Crude petroleum 2 gallons, whale oil soap (dissolved) 5 pounds, boiling water 1½ gallons. Churn violently 5 minutes, then more slowly, adding water to make 10 gallons.

This will contain ½ pound soap to the gallon of mixture and 20 per cent. crude oil; it costs about two-thirds the cost of fish oil emulsion, or 4 cents per gallon. This quantity of soap seems necessary to emulsify the crude oil and hold it, and also to lessen the severity of the oil treatment. The emulsion may be diluted more or less and thus vary the strength.

ORCHARD TILLAGE.

ALMOST nearly every Farmers' Institute and Fruit Growers' Meeting held this season the most prominent topic seems to be Tillage of the Soil.

Some years ago it was Commercial Fertilizers. A year or two ago it was Cover Crops, and then when these questions were well understood by the cultivators of the soil, the itinerant professor turns the attention of his farmer students to the importance of physical conditions, and the conservation of soil moisture by tillage. When such valuable instruction is being given free of charge in such a popular and interesting fashion, surely no farmer can afford to miss a single visit of these instructors. Certainly the man who does not attend will soon find himself far behind in the intelligent cultivation of his farm or orchard crops.

An excellent resume of the subjects referred to was given lately by Mr. G. H. Powell in a recent number of the American Agriculturist as follows:

High intensive tillage has the result of making plants grow better. The first object of Tillage is to make soil fine, so that plants can grow into it. The next object I wish to lay down, that we till primarily to make land rich. The principal elements of food that plants use are potash and phosphoric acid. Every acre of soil, I judge, in New England, has from 5,000 to 40,000 pounds of this in the first foot of soil over an acre of ground. This store is wisely locked up so that it is not easily extracted, and if it wasn't some enterprising Yankee would be getting it to sell. It is not how to buy commercial fertilizers, but first how to utilize the stores of plant food already in the soil. Talk about the New England soil, all it wants is stirring up. I judge if most of the abandoned farms were properly stirred up they would show an astonishiagly large amount of plant food. Our fruit crops suffer more from lack of moisture than lack of good plant food.

Advantage of Weeds.—If it had not been for weeds we would not have learned about tillage. Soil is made up of mineral matter and of vegetable matter. A piece of new land is rich in vegetable matter. A cover crop for an orchard is simply a plant that stays upon the ground until you plow the ground the following spring. First I want to define the fundamental object. The most extensive element of plant food is nitrogen. It is soluble and dissolves quickly.

The greatest loss of this element occurs in winter unless there is something to take it up and then be turned under in the spring.

Cover Crop.—One of the dangers of winterkilling through the insufficient ripening or hardening down of buds is overcome through the use of a cover crop. Fruit buds are tender when growth continues too late in the fall. The whole of the fall ought to be used in hardening down. One of the best ways to accomplish this is to put in a crop on the ground that will grow and take up the available plant food and thereby stop down the fruit trees so they will harden down. Another object of the cover crop is to dry out the moisture in the spring. By a cover crop you can plow from one to two weeks earlier in the spring on this account. It is a mistake to allow the cover crops to go too long in the spring before plowing under and to remove too much moisture from soil.

A cover crop adds vegetable matter to the soil and replaces the matter burned out year by year by culture. One of the advantages of the cover crop is to make the soil spongy so that it will hold moisture. The ideal time of sowing cover crops depends on the season, but should be about the time the trees cease their growth. Some allow the cover crop to grow in spring, and if it is crimson clover, to do so till it comes into bloom. I believe that this is wrong. The best growth we can get on a orchard is in the spring. Two weeks in early May are worth more than six weeks later. The cover crop should not be allowed to absorb too much from the soil in the spring, and early plowing is best for early growth of the orchard. Crimson clover, cowpeas or other crops that have the power of gathering nitrogen from the air make good cover crops. Turnips, rye, oats and others do not.

NEW IDEAS IN STRAWBERRY GROWING.

OUR friend, Mr. R. M. Kellogg, of Three Rivers, Michigan, was to have given us a full text copy of his address before the New York State Fruit Growers at Rochester last January. His ideas were so radical that we asked him to allow us to publish them in full. Since, however, the manuscript has not yet come to hand, we will substitute a report of his address which appeared in the Michigan Farmer.

Fifty years ago the stockmen stood just where we horticulturists stand now. Individuality counted for nothing. All they wanted to know was the pedigree. An animal might be ever so much deformed and a perfect runt, but if it was of a pure breed, they said they could feed and house it to develop its good qualities. The case is different now. They want to know the skill of the breeder as well as the description of the animal's ancestry, and above all they want individual perfection. We talk continually of varieties. Any old thing of a plant will do if it is of the right variety. We have lost sight entirely of the individuals composing the variety. It it not true that they are all the same? They are constantly changing. The life of a strawberry plant is only for two or three years. Its vascular system cannot be changed and moulded into perfect development in so short a time. It often requires years of time to do it.

We do want **new seedlings** with constitutional vigor and a vascular system which manufacture larger berries and impart to them a brighter color and firmer texture, but we want also to know how to maintain their ability to continue this heavy fruitage. I quite agree with Prof. Bailey when he says: "We need not so much varieties with new names as we do a general increase in productiveness and efficiency of the types we already possess."

No one should question for a moment that soil, location and treatment are potent factors in fruit growing. Varieties of plants are like races of men. Change the Hottentot to the land of the Eskimo and he is a failure. A born merchant fails as a farmer. One man is happy in a hovel, while another

craves the environments of a palace. One man has the knack of pleasing a particular plant and it succeeds under his treatment, while it fails with another grower.

Let me give you my **plan of propagating plants,** one which I have practiced with the greatest care since 1884. I always propagate from ideal bearing plants. First, they must be grown under the best natural conditions, usually in hills, and have special care; be kept under restriction and protected during the winter by careful mulching. No one should think of growing plants for a propagating bed in the field with those to be fruited. Our field plants are always set in the spring, and while tillage is going on a careful watch is kept for any specimens which may show superior qualities to their fellows. Where this is marked we place a a numbered stake by it and make a scale card, noting its foliage, vigor and freedom from fungi, size of its crown, disposition to throw out runners, and in the fall whether it has well developed fruit buds. In the spring those showing the highest scale are selected for restriction, and as soon as blossom buds appear, about one-half are carefully removed and the balance allowed to bloom and set fruit. This is done to prevent weakness through excessive pollenation. When fruit is set all the berries are removed except two or three on each stem, and as the growth proceeds, size, color and firmness are noted, and when all have ripened we finish the scale and can then determine which plant has the best physical organism. Special care is then given it, and its new runners are rooted and transferred to a special bed, where they are allowed to make runners for next spring's planting. Thus, every year we discard those plants making undesirable changes, and give our care to those only which are physically able to respond to generous treatment. The next year selections are again made, and thus all bad variations are discarded every year and only the strong well-balanced plants absorb my labor and occupy my land.

Another reason why plants should be grown in a special bed is, that the runners should be layered so they will root early and become well matured both in root and bud. They must not be thrown around in a bunch, but each must have plenty of room with leaves fully exposed to sunshine or they will not be perfect.

The old wide matted row must go.—The cultivator throws the runners around in clusters, crowding the leaves together so the sun can only shine on the edges. The plant should always have room for each leaf to lay flat in order that it may have the full benefit of the sun's rays. No plant should be allowed to play the role of a weed and encroach upon others. The ideal way is to grow them in a hedge, making the rows from 30 to 36 inches apart, according to vigor of growth, and setting the plants about 30 inches apart in the row, and layering the runners so the new plants will stand eight to ten inches apart, and after that the new runners are cut with the rolling disk and finished by hand. If the physical condition of the plant is what it should be, when you check vine growth by cutting a runner, it will at once proceed to build up a new crown and fruit buds with added roots, but if it is weak in fruit bearing it will proceed to throw out new runners.

Berries grown in this way are always large, of an even size, bright in color and rich in flavor. The yield will be larger than if grown in any other way unless the land is too poor to grow berries at all. This system permits maintaining the loose earth mulch over all the ground with the cultivator. We give frequent tillage until we have copious fall rains and during the drought our plants are always irrigated, but if land is not especially favorable for irrigation I would not spend large sums of money in elevating water, but would depend on the loose earth mulch.

A strawberry grower must be something of a general. He must plan his work through a series of years, and must not only breed his plants right, but he will, by a system of rotation of crops, bring the soil into perfect condition for setting the plants. He must see his farm in imagination just as it will appear years hence and always work to a definite plan. He must discipline his men as well as himself to do every part of his work deftly and without a false motion. I drill my men like soldiers and often form an awkward squad of the inexperienced ones. The men learn to set the plants at one time and with three movements, and do it exactly right, and handle a hoe as

skillfully as a mason shoves his trowel. In other words only expert cultivators touch the handles of our harrows or lift a line. My berry pickers were taught how to pick a berry and put it into the box without injuring it.

When you come to recommend varieties of strawberries there are so many that will do well in one particular locality and not well in another that it is exceedingly difficult to do. The best you can do is to experiment; try Senator Dunlap. I have fruited it every year for five years. Then we have the Clyde, which is very popular on some soils, but fails on others. If you haven't got strong, rich soil, that will enable it to do its heavy work, don't set it. Strange to say, I never had the Dunlap. I have the Clyde and many others. One of my very choicest is the Brandywine. It does much better with me than Bubach (No. 5), and a great deal better than the Rough Rider, for which such great claims were made a couple of years ago. For canning we like the Brandywine just as well as our old canning favorite, the Wilson. Clyde and Brandywine undoubtedly require strong soil; but it may be said that the majority of strawberries will do well under high culture—that is, on strong, heavily manured soils. Manure and cultivation are the things that make big strawberries and big crops. For ordinary soils and treatment I would recommend Haverland, Wilson, Warfield, Splendid. Haverland often gives an immense yield of fairly good and fair-sized berries under somewhat indifferent treatment, but as a pistillate or imperfect-flowering variety it must have some other sort, like Splendid, Wilson, etc., planted close by or in mixed rows, in order to insure free fruit-setting. Experiment will show which do best in your locality.

Fig. 2324. East Central Fruit Station.

East Central Fruit Station. This testing station is situated near Whitby, and is in charge of Mr. R. L. Huggard. At this place we have planted nearly every variety of pear known in Canada, and in time we hope for most valuable reports of their value. Mr. Huggard sends a view of his place and says:

The photograph was taken from the west, which shows part of the north orchard, with a row of spruce planted 25 years, many of them over 30 feet high. The roof of the house and of the barn is almost hidden. This place was all commons 27 years ago, and now many of our trees are 25 to 30 feet high. We are making syrup from the sap of some of the maples shown in the picture.

APPLES AND THEIR ENEMIES.

How to Spray and What to Spray.

BY W. N. CARD, LL.D., DEPARTMENT OF AGRICULTURE, OTTAWA.

THE demand for Canadian apples of good quality and in good condition is an ever-increasing one, and in Great Britain the market appears to be unlimited, while the prospects for opening and continuing an extensive trade with other European countries are equally promising. Canadian fruit growers, packers and shippers are exhorted to see that the fruit that is exported is well and honestly packed, and that it is of such a quality that the demand shall not only equal our most sanguine expectations, but more than fulfil the desire of the most hopeful growers. In advocating the strictest regard to the requirements of the foreign market the Department is not sacrificing legitimate home markets ; because if the produce be equal to the necessities of the European consumers it must of necessity be all that the home consumer can desire. In this way the advocacy of perfection catches two birds in one trap.

The apple grower is anxious to get the most out of his orchards, but sometimes circumstances combine to thwart his well-intentioned efforts, and to help him out of his difficulties this article is issued. The Department thus takes a hand in fighting some of his deadliest foes, in case he is willing to wield the cudgels provided for his succor.

There are four kinds of insect enemies against whom the apple-grower has to fight. There are those which devour the foliage, those which bore in the wood, those which occur in the bark, and those which attack the fruit. But all insects fall within two classes, which can be separated by the nature of the mouth parts. In the intelligent use of remedies a consideration of this point is of the utmost importance. In the class of biting insects, which have jaws with which they consume the substance of their food, such as caterpillars, all that is necessary is to place on the food plant some poisonous material which will be eaten with the food. For sucking insects, which instead of jaws have a beak or hollow tube with which they suck up their food in the liquid form, such as the plant louse, something must be used which will kill by mere contact with their bodies. For borers in the wood, which cannot be reached by those remedies, preventive measures may be taken by which the plants are rendered distasteful to the mature insects when seeking a suitable place in which to lay their eggs. For this purpose various alkaline or strong smelling deterrent washes may be used.

It cannot be too forcibly emphasized that the operation of "spraying" does not mean sprinkling or showering. "Spraying" means applying liquids by means of a force pump and spraying nozzle with such force as to break up the liquid so thoroughly that it falls upon the plants treated as an actual mist or spray. Unless you carefully spray and not sprinkle you cannot get an even distribution of liquids, therefore you cannot get the best results.

The remedies are numbered for easy reference and to avoid confusion.

1. Kerosene Emulsion.—Dissolve half a pound of whale oil soap in one gallon of rain water by boiling ; take from fire, and while

hot turn in two gallons of kerosene (coal oil) and churn briskly for five minutes. Before using add nine parts of water.

2. Paris Green. — One pound of Paris green, one pound of fresh lime, and add 200 gallons of water.

For **dry** application, take one pound of Paris green, with 5 pounds of flour, land plaster, slaked lime, or any perfectly dry powder.

3. Whale Oil Soap.—For young insects (scale) use one pound in 5 gallons of water. For aphis use one pound in 8 gallons of water. For San Jose scale in winter use 2 pounds in one gallon of water.

4. Tobacco and Soap Wash.—For plant lice or aphis, soak in hot water for a few hours 10 pounds of tobacco leaves (home-grown will do), strain off and add 2 pounds of whale oil soap. Stir until all is dissolved and dilute to 40 gallons. Apply early and two or three times at short intervals.

5. Alkaline Wash.—For Borers. Reduce soft soap to the consistency of thick paint by the addition of a strong solution of washing soda in water. If applied with a brush during the morning of a warm day, this will dry in a few hours and form a tenacious coating not easily dissolved by rain.

5. Poisoned Bordeaux Mixture for Fungi and Insects on Fruit Trees.—Dissolve 4 pounds of copper sulphate (bluestone) by suspending it inside a wooden or earthen vessel containing 4 or 5 gallons of water. Slake 4 pounds of fresh lime in another vessel. If the lime, when slaked is lumpy it should be strained through course sacking or a fine sieve. Pour the copper sulphate solution into a barrel, or it may be dissolved in this in the first place; half fill the barrel with water, add the slaked lime, and 4 ounces of Paris green, fill the barrel with water and stir thoroughly. It is then ready for use. Stock solutions of dissolved copper sulphate and of lime may be prepared and kept in separate covered barrels throughout the spraying season. The quantities of bluestone, lime and water should be carefully noted.

7. Copper Sulphate Solution.—This is prepared by dissolving one pound of bluestone in 25 gallons of water. As soon as dissolved it is ready for use, but must be used only before the buds open.

The worst enemies of the apple tree, attacking the foliage, are the eye-spotted bud-moth, which can be destroyed by spraying early with a strong Paris green wash consisting of one pound each of Paris green and fresh lime, in 100 gallons of water; the Cigar Case-bearer, the Pistol Case-bearer and Leaf Rollers, all of which can be destroyed by the same means.

Destroy tent caterpillars by spraying the trees with poisons as given in either number 2 or 6 directly the young caterpillars are noticed. All tents should also be cut off and destroyed early before the leaves hide them

Green fruit worms should be treated to number 6.

Cankerworm can be destroyed with 2 or 6 as soon as the caterpillars appear.

The apple aphis can be destroyed with 3 or 4.

The insects attacking the wood are principally the flat-headed borer and the round-headed borer, and the best remedy for both is a regular treatment every June just before the time the eggs are usually laid, with deterrent washes such as number 5, or the same with crude carbolic acid added in the proportion of one pint to four gallons of the wash, to be applied with a large brush to the bark of the tree trunks and larger limbs. When a tree is infested, the presence of the grub may be detected by the borings which it pushes out of its burrows and by the sunken discolored appearance of the bark. By cutting through the bark the

grub can be destroyed. If it has penetrated into the wood it can be killed with a piece of stout pliable wire.

For the oyster-shell bark-louse use 1 or 3.

There are several other kinds of scale insects which occur upon the apple which may be treated in the same way as the oyster-shell bark-louse.

The woolly aphis is seldom a serious pest in the East, but it is very troublesome in British Columbia. The best remedies are to spray the colonies of these white downy lice on the branches and trunks with kerosene emulsion or a wash made with one pound of whale-oil soap in five gallons of water. For the root colonies remove the surface soil to a depth of six inches for a foot or two around the trunk and dig in tobacco dust or refuse from a tobacco factory.

The codling moth is the parent of the destructive apple worm so well known to all growers and consumers of apples throughout the world. In eastern Canada there is only one regular brood of the insect; but west of Toronto there are two broods, the latter of which is by far the more destructive. When there is only one brood spray with 2 or 6 three or four times in the spring, beginning immediately after the flowers have fallen, at intervals of ten days. That is all that is required. Where there are two broods, band the trees in autumn with strips of burlap, whisps of hay or any "tree protector."

Number 6 will destroy, also, many other enemies which feed on the foliage, such as cankerworms, tent caterpillars, leaf-rollers and the like.

Spraying is useless for the apple maggot. The remedy most to be relied on is the prompt destruction of windfalls so as to prevent the maggots going into the ground. This can best be done by keeping a sufficient number of pigs, sheep or other stock in the orchard. The penning up of poultry beneath infested trees has been found a most useful practice.

The San Jose scale is the most difficult insect to eradicate that the fruit growers have to contend against, and active experiments are still going on to discover a remedy for this pest. Up to now the two treatments our experts have found to give the best results are the spraying of trees in winter, or before the buds burst, with a solution consisting of two pounds of whale-oil soap in one gallon of water, or with 25 to 30 per cent application of crude petroleum and water.

These are facts which are of the utmost importance to apple growers at this season, and are the ascertained results of years of patient study, research and experiment on the part of Dr. James Fletcher, the Entomologist, Mr. W. T. Macoun, the Horticulturist, and Mr. Frank T. Shutt, M. A., Chemist, at the Central Experimental Farm Ottawa, and other parts of the Dominion.

FRUIT CROP REPORT.

Damage by Frost—Replies from Various Sections.

A. E. Sherrington, Walkerton.— "At the present time, May 16th, the prospects are good; everything is full of bloom but very little out yet. Very little damage from frost, although we had twelve degrees of it, on the night of the 10th. My apricot was in full bloom, still it is apparently setting considerable fruit."

R. L. Haggard, Whitby, May 16th.— "Frost did no injury to fruit so far, as blossoms were not developed, except apricots, which were in bloom and are some-

what damaged. If blossoms count for anything, there will be a great abundance of fruit, as almost every tree is full of buds and the bloom is just beginning to develop. Grapes are very backward, as the land is cold and growth slow. The foliage is coming out slowly. The weather is chilly, just about at the freezing point every night."

S. D. Willard, Geneva, N. Y.—"There is now no doubt that quantities of the early fruits have been destroyed by the frost. It is unprecedented in the history of this section. Nothing like it has visited this section at this time of the year within my memory."

Geneva Experiment Station, N.Y.—"In the frosts of the two nights it is estimated that in the region of Geneva and vicinity the loss will reach the enormous sum of three-quarters of a million dollars. This territory, being more extensive in fruit growing, except grapes, than any other fruit district of the State, the loss will be felt most seriously."

W. W. Hillborn, Leamington.— "We have had little or no injury from frost. May 16th I examined the strawberry blossoms and failed to find any injured by frost. The frost was so light that it could be seen only in very few places. The prospect is good for a large crop of cherries, peaches, apples and pears. Plums light; most varieties had such a heavy crop last season that no blossom buds appear this spring. Small fruits promise a large yield, but the acreage is light."

W. W. Bunting, St. Catharines.— "I think it would be immature to give any estimate of the damage by frost for a few days. The impression is that grapes are cut about fifty per cent, Crawford peaches almost destroyed, other fruits less seriously injured. On the whole, outside of tomatoes, Japan plums and yellow peaches, other fruits will probably make up loss in better quality."

G. C. Caston, Craighurst, (May 19).— "Frost seems to have done very little damage here, so far as I am able to judge. Owing to the previous cold weather, things were not far enough advanced. A few early varieties have suffered to some extent. Prospects for fruits of all kinds were never better."

W. H. Dempsey, Trenton (May 21).— "Apples not injured. Pears slightly damaged. Plums and apricots were caught in full bloom, and damaged. All small fruits that were in bloom badly injured, and in many cases the foliage killed back. Walnuts and butternuts killed back and forcing new buds. All fruits are blooming heavily and are out about eight days later than last year."

Harold Jones, Maitland.—"The strawberry crop in this section will likely prove less than one half an average. All advanced bloom was injured by the frost of May 10th and only a small percentage of late bloom to follow. Other small fruits and the smaller tree fruits such as plums, cherries, etc., are not grown to any extent. These fruits have suffered to some extent but there is enough bloom left to give a scattered crop. The apple crop is the staple for this section and I am glad to report the injury by frost as light. The center blossom in many clusters have suffered but there is an abundance left to give a good crop. The general condition of the orchards is all that could be desired, where mice did not injure them, and insects have been held in check by continued cool weather."

ROSE PESTS.

BY W. HUNT, SUPT. GREENHOUSES, O. A. C., GUELPH.

WITH the advent of June blossoms, and the increasing heat of the sun, insect pests are sure to make their appearance. The old adage "that an ounce of prevention is better than a pound of cure" is one that flower lovers will do well to bear in mind, and apply practically its teaching at this season of the year.

Much of the success to be attained during the summer season both in the flower and fruit garden, depends very largely on prompt and vigorous action in preventing the development and increase of the many kinds of insect pests that prove so troublesome and destructive in our gardens. Too often the application of remedies and preventive measures for the extermination of insect pests, etc., is left until the plants have become so badly infested that they are hopelessly spoiled for floral or decorative purposes for the greater part of the season.

How often do we see rose bushes with the foliage and buds partly eaten and destroyed by the rose-worm or slug, long before the buds have had time to develop even the faintest tinge of the gorgeous colors of their beautiful petals, when an early and timely application of a little dry hellebore powder, sprinkled over the bushes before the flower buds developed, would have prevented the disfiguration of the plants as well as the loss of the roses. I have found it a wise course to always give rose bushes a sprinkle of hellebore powder as soon as the foliage has partially developed, before the flower buds are showing very prominently. By doing this and repeating the operation about once a week, until the flower buds commence to open out into flower, the foliage as well as the flower buds can be saved from disfiguration and partial ruin. The best time to apply the hellebore is early in the morning, whilst the foliage is damp with dew.

Take again the rose-thrip, that is so troublesome to rose-growers from the time the rose buds appear until early autumn. This insidious little white fly or midge, that secretes itself on the under side of the leaves, is oftentimes not detected until the foliage has become bleached and whitened by its destructive attacks. Its presence, however, can usually be detected if a close

inspection of the foliage is made soon after the first leaves appear on the bushes. At this time the insects are so minute that it requires careful search before they can be seen. This is the proper time, however, to commence the application of insecticides, as if left until later, when hot, dry weather prevails, it is almost impossible to eradicate them from the bushes.

An application of tobacco in some form or other is the best and safest preventive of the development and increase of the rose-thrip. I have found that an application of dry powdered tobacco leaf or dust, sprinkled once or twice on the bushes as soon as growth commences in early spring, and the operation repeated once a week until the flower buds are developing, has proved very successful in preventing the appearance of these troublesome pests of the rose grower.

A rather strong solution of tobacco water, made by pouring boiling water on tobacco, especialty the raw leaves or stems, is a good preventive for the rose thrip. This solution should also be applied early in the season and at intervals as before recommended. There are several preparations specially prepared as insecticides that are very useful to the rose-grower. Most of these preparations are largely composed of the essence of tobacco and are perhaps easier to obtain than raw tobacco. Nicoticide and Sulpho-Tobacco soap may be mentioned as amongst some of the best preparations of the kind. It should be remembered however that one application early in the season does more good than perhaps three or four will do later on when the insects have become well established and numerous. A weak solution, made by dissolving about a teaspoonful of whale oil soap in two quarts of water, will prove of great service in preventing the ravages of the rose thrip. The solution should be applied with a syringe or wisk to the underneath part of the foliage as much as possible.

Another enemy to the successful culture of the rose, is the red spider. Climbing roses are more liable to attacks from this little pest than are bush roses.

The red spider delights in a dry arid atmosphere, and roses that are trained near to, or perhaps close to, a wall or fence, offer splendid inducements for its attacks. These pests are also very minute and oftentimes hard to locate until they have done considerable mischief. The first intimation of their presence is the unhealthy, whitish appearance of the leaves, and finally the constant dropping of the dried, half-devoured leaves; unless they are stopped before they have reached this stage. Constant syringing and sprinkling with cold water is the best preventive of the appearance of red spider, as they cannot exist in a damp atmosphere. It is almost impossible to prevent the attacks of these little pests on climbing roses planted close against a house or wall having a south aspect. Those of our readers who have roses planted in such a position will do well to syringe or sprinkle their bushes with water well up to the time of flowering, and for the greater part of the summer after the flowering period, if they would have good healthy rose plants. An open, airy position suits roses the best. If planted against a wall or fence an east or north east aspect is by far the best for their successful culture. The aphis or small green fly is also troublesome to rose growers. Constant syringing, or an application of tobacco water, usually rids the bushes very effectually of these less destructive insects than thrip, red spider, or the rose slug.

Those having rose bushes or similar plants that are liable to attacks from insect pests will find by using the different insecticides early in the season that much time and labor can be saved, and much better results obtained from their plants than by leaving the application of remedies until the insects have obtained a strong hold on the plants.

CLEMATIS PANICULATA.

BY A. GILCHRIST, TORONTO JUNCTION.

FIG. 2325. CLEMATIS PANICULATA.
Photo furnished by A. Gilchrist.

I AM surprised to find that this creeper, is so little known throughout the country, and that there are comparatively few even in Toronto. The Clematis is undoubtedly the best hardy climber, suitable for our climate. Nothing adds so much to the beauty of the home surroundings as creepers, clinging to and festooning our walls and verandas. We have a very meagre list of climbers suitable for that purpose that will stand our climate.

Prof. L. H. Bailey, in his Cyclopedia of American Horticulture, describes it thus, "Clematis paniculata (white) introduced from Japan, has proved a wonderfully valuable acquisition in this country, and has already become exceedingly popular. It is of remarkably vigorous habit, often making a growth of twenty to twenty-five feet in a season. It seems thus far to be entirely free from disease, is delightfully fragrant, and so floriferous that the blossoms form a dense sheet of bloom and remain in full beauty for several weeks. The foliage is very thick and heavy, making it very desirable for covering porches and arbors. But, according to Nicholson's Dictionary of Gardening, it has taken over one hundred years to become popular, for Nicholson says, "It was introduced from Japan in 1796". It is described as flowering in July and August, the description of the foliage differs somewhat from the Clematis paniculata, as we know it; with us it flowers in September and October. There seems to be some points here which Prof. Bailey has not yet cleared up. Every householder in the land should have this climber. Clematis paniculata stand in the same relation to climbers that Hydrangea paniculata does to shrubs, the best late flowering plants of their respective classes. I send you a photo of a plant which is four years planted. In looking at a distance you would imagine a fall of snow was resting on the green glabrous foliage, which makes it exceedingly attractive. Individual flowers measure about an inch across.

FIG. 2326. A CORNER IN A GARDEN.

THE WORLD BEAUTIFUL.

ENTRANCE TO A HOME.

WE seem to be entering upon quite a new era of landscape art, and our leading cities are being stirred up as never before. The Hamilton Horticultural Society and the City Improvement Society have joined hands with the Hamilton Spectator in a laudable effort to work out a placid civic improvement through the agency of the children, to whom numerous prizes of considerable value are to be given for well kept gardens; while Toronto is exerting herself to secure an island park that shall do credit to the city.

FIG. 2327. A BEAUTIFUL APPROACH.

Doubtless the excellent address by Dr. Saunders, given in the Association Hall, on the 15th of April last, has gone a long way in enthusing Hamilton citizens in the judicious planting of trees and shrubs for the embellishment of their town. The City of Cleveland, Ohio, has set a notable example of the possibilities of a movement such as that undertaken by our Hamilton friends, and, when the results are worked out, we are promised a collection of amateur photographs which we will engrave for our readers. In the meantime we give some of the Cleveland views, showing how well this, that was at one time called "The Forest City," is now becoming famous as "The City of Flowers."

FIG. 2328. VISTAS IN HOME GROUNDS.

Prizes for Gardens.* —There, as in Hamilton, it was a daily newspaper, The Leader, that conducted the contest, inviting the Home Gardening Association to award the prizes. Sixty dollars was offered for the best amateur flower garden, $30.00 for the second best, $25.00 for the best amateur porch or window box, and $10,00 for the second best. This was a contest among adults, but a similar crusade was started among the children by the offer of a series of prizes for boys and girls not over fifteen years of age by Judge Dellenbaugh. He offered eighty prizes, and thousands of children went to work making gardens. The Home Gardening Association distributed, principally through the teachers of the public schools, thousands of packages of seeds, a prize being given for each variety.

Results.—The effect was marvellous. Back yards that had been receptacles for rubbish became places of beauty, and front yards decorated with flowers needed no fences for protection, so universal was the public appreciation of them. Even strangers were impressed and went away saying "How many lovely homes there are in Cleveland."

Now let us hope for similar results in all our Canadian towns and cities.

*Credit for the illustrations, Figs. 2326 to 2328, 2330 and 2331 is due to Home and Flowers, a Cleveland Journal.

FIG. 2329. A BACK GARDEN IN COLORADO.

FIG. 2330. A PRIVATE GARDEN.

Back Yards.—It is not yet too late to sow some varieties of annuals for late flowering, and many a city and village back yard might be transformed from a barren waste, with rubbish heaps, to a place of beauty by a little attention during odd moments. Town boys and girls delight in helping in such work, and, judiciously planned, the work may be made to them both a source of health and of instruction in nature study. Fig. 2329, from The Garden, shows what can be done with such a back yard by utilizing every foot of space for flowers. Here the husband finds recreation from his office duties in the cultivation and care of his gladioli and other plants, while the wife has the benefit of that out of door life so necessary to her health and happiness, in the training of the bushes and the preparation of her table bouquets. In our illustration the Rudbeckia (Golden Glow) is seen to grow to such a height that the lady requires an eight foot step ladder to gather the flowers, an instance of the excellent results attainable under such conditions.

FIG. 2331. A GARDEN BED.

FLOWER GOSSIP.

Be sure to have plenty of mignonette. You want so much of it that you feel safe in cutting freely. It is one of the most useful flowers we have for cutting.

The variegated hop is a charming plant for covering screens and verandas. Its leaves are quite as beautiful as many flowers are. This reminds me to say that the old hop of our gardens is one of the best vines for covering large surfaces, because it grows so rapidly and luxuriantly. It isn't a pleasing plant to handle without gloves, but it is pleasing to look at.

If you have a tiny lawn, don't spoil it by making it look as if it had an eruptive disease, as it will if you scatter flower beds all over it, but leave a solid space of green between the house and the street.

If you want a grand show, plant half a dozen hydrangeas, the hardy kind, in a group. A dozen will give greater pleasure if your lawn is large enough to allow it. Planted in a mass, the effect is exceedingly fine when the plants are in flower. One does not understand the decorative possibilities of this plant by seeing specimens planted singly. If possible, plant so that the group will have a background of evergreens.

Of course you will have Hollyhocks. Every amateur florist will, if he is wise. Like the hydrangeas, the hollyhock is most effective when grouped. I would never advise planting it singly. It is a good plan to sow a paper of Hollyhock seed each summer. By doing this you will have a fresh lot of young plants for each season's flowering, and it is from the young plants that you must expect your finest flowers.

If I were asked to name the best general purpose hardy border plant, I would select the perennial phlox. It gives an almost solid mass of color, blooms for many weeks, and its carmines, reds and purples are exceedingly rich in tone. And it is very easy to take care of. Give it good rich soil, keep the grass and weeds away from it, and that is all you need do for it.

All things considered, the gladiolus is the best of all the summer-flowering bulbs. It is a flower anybody can grow, and it is lovely enough to satisfy the most exacting. You can have it in the most delicate colors, if your taste runs in that direction, and you can have it in colors of extreme brilliancy if such are your preference. It is something you can depend on to do well if you give it half a chance, but the better you care for it the better it will do, and it pays to give it liberal treatment. It likes a soil that is light, mellow and rich. Any soil in which corn will grow suits it, and it likes to be planted in the open ground about the time corn is planted. That is early enough. If you have bulbs enough to warrant you in doing so, hold back some for planting about two weeks later. By making successive plantings you can prolong the season for a month or more, thus securing fully two months' display of beauty from this charming flower. I prefer to plant the bulbs in clumps or masses; in this way a much better effect is secured.

Bedding Plants.

Where striking and peculiar effects are desired, it has become customary to make use of what florists term bedding plants in summer gardening. The term is used

to designate such kinds of greenhouse plants as bloom well when planted out in beds, or have striking foliage whose colors take the place of flowers.

The geranium stands at the head of the list. No other "bedder" gives such a brilliant show of color, or keeps up such constant bloom throughout the season. All you have to do to keep a geranium blooming from June to frost is to remove the flowers as they fade and prevent the formation of seed. The double kinds are the most popular for bedding, as the flowers last longer and give a more solid color effect.

Tuberous begonias are becoming very popular for bedding purposes. They are rich in color and produce a fine effect.

Heliotrope is an excellent bedder, flowering very freely in rich soil. It will be found very useful to cut from.

The verbena is one of the best of all bedders, being a very free and constant bloomer, and having intensely rich and beautiful colors.

Among foliage plants, the most popular is the coleus. Very striking results can be brought about by its use. By planting it close together and keeping the plants cut in closely, solid effects of color can be obtained. The colors being so varied and distinct, it is much used in carpet-bedding in which a set pattern is worked out.

The achyranthes and alternanthera are brilliant little plants which bear cutting in and trimming well, and are therefore used in producing "pattern" effects.

The centaurea has a soft grey leaf which contrasts well with the coleus, and is used in connection with it. Golden feverfew is also used extensively for bedding purposes.

All the plants named, except achyranthes and alternanthera should be set out one foot apart. These should be six inches apart. Rapid growers must be trimmed frequently to keep them from getting the start of such kinds as are of slower growth, in order to produce satisfactory results. In carpet-bedding you want a smooth, even surface in which all the colors have a chance to equally display themselves.

In putting out plants, choose a cloudy day, if possible; water them well and shade for a day or two.

Tropical Effects.

One of the best plants for producing a strong tropical effect on the lawn, or in the garden is the ricinus. It can be grown from seed. It has immense palmate foliage if a rich green, shaded with red, with a metallic luster when looked at in the sun. It grows to be eight or nine feet high, branching freely. It is excellent for the center of a circular bed.

Another plant with large and striking foliage is Caladium esculentum. It has leaves two feet or more across and four in length when grown in very rich soil, each leaf being produced on a stalk sent up from the tnber. Fine for grouping about the ricinus.

The canna is a noble plant, with large rich foliage ranging through various shades of green and bronzy-red. Some varieties are tall growers, while others are quite dwarf. In addition to its fine foliage it bears very brilliant flowers.

The Musa ensete, or Banana plant, has very large leaves and is excellent for the center of a circular bed.

There are many plants such as palms, pandanus or screw pine, ficus and others of similar habit which can be put out of doors in summer with advantage to the plants. These can be used in helping to produce tropical effects.

The striped maize—a variegated variety of corn—can be used with excellent

results if several stalks are allowed to grow together. Its foliage is very much like the old "Ribbon Grass," though of course on a much larger scale. It should be planted in "hills," like the common corn, one stock not being sufficient to bring out the desired effect. As a plant to be used in the center of a group it is very desirable.

—*E. Rexford in Vick's Monthly.*

BEGONIA ERFORDII.

BY W. HUNT, HAMILTON.

FIG. 2332. BEGONIA ERFORDII.

THIS is one of the pearls amongst this useful and popular class of plants. Its habit of growth together with its free flowering propensity makes it a valuable addition to the numerous varieties of Begonias known to floriculture. Even a small plant of B. Erfordii, when laden with its delicate pink blossoms, is very attractive, but when used as a border around some taller growing variety out in the open ground in summer, its beauty and adaptability for bedding purposes, as well as a pot plant, can be thoroughly appreciated. Used as a bedding plant it requires a light, well drained soil and, if possible, a slight shade from the sun during the very hottest part of the day. Begonia Vernon and Begonia Ingrami are also good varieties for bedding out. Being of a more upright habit and of rather stronger growth, these are well suited for the centre of a small bed, whilst B. Erfordii is better suited as an edging plant.

There is no reason why this type of Begonia should not become quite popular as bedding plants as both the Erfordii and Vernon are raised easily from seed. The seed should be sown in February or March in a greenhouse or hot bed and grown indoors until early in June, when the plants can be put out into beds or borders after all danger of frost is over. The seed requires careful sowing, as it is very minute, but after the plants have passed the seed period they are as easy to handle as almost any seedling plant. These Begonias also strike readily from cuttings. The plant as shown in the photo is growing in a 2½ inch pot.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order addressed The Secretary of the Fruit Growers' Association, Parliament Buildings, Toronto, are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

PERSONALS.

Charles Forster, so well known as the New York forwarding agent of apples for Simons, Jacobs & Co., of Great Britain, died of typhoid fever on the 19th of April. Many of us remember this gentleman's able address on the export trade of apples before the American Pomological Society last September at Buffalo.

Mr. W. H. Hunt has been appointed superintendent of the greenhouses at the O. A. C., Guelph. He has been well and favorably known to our readers for some years past through his excellent contributions on floriculture, and in his new position he will have still better opportunities to help us in our work.

The Ven. Archdeacon Mulholland of Owen Sound, president of the affiliated local Horticultural Society of that town, passed away on the 19th of April. Foremost in every effort for civic improvement, as well as in matters educational and religious, the loss of such a man is a most serious one, not only to his own community but also to the country at large.

Export of Fruit.—Now that Mr. W. A. McKinnon is sent to Great Britain to remain a year studying the conditions of the fruit trade at the consumers' end of the line, we ought to reach some definite information which will help us in our business. So far however, we have not been given his Eng-

lish address, but we hope in time to be put in a position to correspond with him so that the fruit interests will be benefited as much as possible by his work.

Mr. Alexander McNeill, our well known director for Essex, has been made chief fruit inspector for Ontario and is one of the most efficient workers in our interest. Under his oversight the Fruit Marks Act will surely work out a revolution in the brands of Canadian apples.

Show at Wolverhampton.—Mr. A. McD. Allan of Goderich has the appointment to take charge of the Canadian Fruit Department at Wolverhampton. He writes as follows :—

"I will leave about the 1st of May for Britain, where I shall remain all season at the Exhibition. I will be glad to hear from all our good fruit shippers who desire to put up fine brands and sell direct. I think there will be no trouble in doing this, with proper care in establishing reliable brands so that our shippers can sell at a price F.O.B. here. My address will be 'The Fruit Department, Wolverhampton, England,' and I will be glad if you will kindly make a note of this in the Horticulturist. I hope to give you an occasional letter."

NOTES FROM OUR SECRETARIES.

CONTRIBUTED BY MR. G. C. CREELMAN.

Mr. Frank Metcalf, secretary of the Lake Huron Fruit Growers' Association, reports that their association is attracting considerable attention among the farmers. On Monday May 12th an orchard demonstration meeting was held in the orchard of Mr. A. W. Sloan. Mr. Alex. McNeill, of Walkerville, Dominion Fruit Inspector, and Mr. A. E. Sherrington, of the Experimental Fruit Station of Walkerton, gave practical demonstrations in spraying and talks on general orchard management.

Mr. R. Cullis, secretary West Durham Farmers' Institute, writes us of a successful orchard demonstration meeting held on the 8th inst., at Camborne, in the orchard of Mr. Wm. Parsons. Messrs. E. Lick, of Oshawa, and T. J. Carey, of Cobourg, Dominion Fruit Inspectors, were the speakers. As a result of the meeting a local Fruit Growers' Association was organized to be known as the Township of Hamilton Local Fruit Growers' Association. The following officers were elected :—

President—Mr. Thos. Davidson, Camborne.

Vice-President—Wm. S. Carr, Cobourg.

Sec.-Treas.—R. Cullis, Camborne.

Nearly everyone present joined the Association. An adjourned meeting of the society will be held in Cobourg on June 10th, at 2.30 p.m.

A Fruit and Produce Directory is to be issued in Boston, in July. We are asked to give a list of the apple growers of Ontario for this work. No doubt those whose names are inserted will be put in touch with buyers in foreign countries. We shall be glad if every apple grower will send in his name and address and we will include it in our list. Address L. Woolverton, Editor Canadian Horticulturist, Grimsby.

QUESTION DRAWER.

Cutting Back Cedar Hedge.

1289. SIR,—I have a Cedar (Arbor vitæ) hedge, five feet high. If I cut back to three feet will it grow out again all right.

W. H. CHAPLIN, Newcastle.

Such a hedge should be pruned annually or oftener, and never allowed to reach such an overgrowth. If trimmed to a conical form, or blunt conical, it will be found easier to keep its proper form than if cut square on the top. If the hedge is in this latter form and must be reduced from five feet to three feet in height, the owner must be prepared to see it unsightly on the top for two or three years, until the middle line on top recovers itself.

P. Barry and Mount Vernon Pear.

1290. SIR,—I am sending you to-day two pears of P. Barry, or at least that is what I ordered. Kindly let me know through the Horticulturist if they are true to name. Would it be a profitable pear to grow for export? I gathered the pears November 1st. I protected them from frost till gathered. Is our season long enough for them to mature properly? The other pear I got for Mount Vernon; is it true to name? Would it be profitable to grow for export?

GEO. H. NIXON Hyde Park, Ont.

The two pears are P. Barry. This pear does well in California, and fine samples are sent in to the New York market every spring, but the samples we have seen grown in Ontario are too small to be profitable.

The third sample is not Mt. Vernon, but probably some seedling. We do not advise planting Vernon for profit.

Mice in an Orchard.

1291. SIR,—Mice have done a great amount of damage in this neighborhood during the last winter, both to apple trees and to shade trees. Please advise me how to destroy them. Wrapping the trunks with new tarred paper protects them, but it is a great deal of trouble.

It is difficult to destroy mice in an orchard without also poisoning some friendly animals, and therefore the simplest means of saving the trees is by some kind of protection. We have had perfect immunity with a mound of fine earth about the trunk. Probably the simplest and cheapest thing would be the veneer tree protectors, figured on page 133. These are being made by the Grimsby Manufacturing Co.

Apple Canker.

1292. SIR,—Can you give us any information as to Apple Tree Canker, its cause and cure? If so, we will be very much obliged.

CAVERS BROS., Galt, Ont.

In his report of the Nova Scotia School of Horticulture for 1900-1901, Prof. F. C. Sears, in dealing with the subject of apple canker, says: "It attacks trees of all ages, but certain varieties seem to be very much more susceptible to it than others. The Nonpareil is more affected than any other sort, and in Annapolis County some orchards have been almost ruined by the ravages of this disease. It is caused by a fungus growing in the tissues of the tree just as the black spot fungus grows on the surface of the fruit, and at certain seasons of the year in the diseased areas may be found little brown pimples, in which are contained the spores or seeds through the agency of which the disease is spread. Just at what season or seasons these spores are scattered we have not yet determined, but they seem particularly prevalent in the early spring. The disease attacks the tree oftenest at a fork in the branches, causing an ugly grown wound, and often eventually causing the branch to break at this point. Not only this, but trees so attacked, even though they may not break, lose their vitality and become less and less profitable. Until we

can determine accurately just when the spores are spread, we shall lack an important item in our knowledge of how to combat this disease, but pending that discovery I would suggest removing as far as possible the affected branches, and careful and thorough spraying of the branches with Bordeaux mixture at the time the usual sprayings ings are made for black spot. I find this disease much more prevalent in Annapolis County than in Kings, and apparently very much on the increase there."

Winter Apple for Lanark.

1293. SIR,—Which variety of winter apple would you advise for this part of the province? The Pewaukee does well and is a fine apple, but drops its fruit badly. Please say how we should pronounce Bietigheimer?

You should succeed with Wealthy for early winter and Ben Davis for main crop. This latter hangs well on the tree, is a clean skin and colors well. We pronounce the name Beé-tig-ï-mer, with the accent on the first and third syllable.

Fish Oil Emulsion.

1294. SIR,—Would you please give me the formula for the fish oil emulsion as a spray to kill aphis on cherry trees after bloom? Will it kill them without affecting the foliage?

Fonthill. A. RAILTON.

The fish oil emulsion is rather strong in potash to be applied to the foliage. It is for application just before the opening of the buds, which is the best time to treat the cherry aphis. The formula was given in our May number, page 184.

Begonia Ricinifolia.

1295. SIR,—I send you a photograph of a begonia grown in a north window of my dwelling house. This plant has been in bloom since the 20th of January. The flower is pink, leaves green on face with a row of red fibrelike bristles on the under side along each vein. They measure 17x14 inches, with stems 22 inches long. Can you name it?

Lindsay. S. GALBRAITH.

The begonia as shown in the photo is probably "Begonia Ricinifolia," although I would not like to be positive, as there are several varieties of this type of begonia generally known as Giant begonias that are very similar in appearance to the one shown in the photo. The flowering habit of this plant and the extraordinary large size of the leaves would lead one to suppose it was "Begonia Ricinifolia," as the latter, or specific name, "Ricinifolia," is derived from the fact that its leaves resemble in a marked degree the foliage of the well known ricinus, or castor oil plant. I have referred the photo and questioned one or two experienced plant growers, who agree with me that as far as can be seen from the photo it is the variety mentioned. W. HUNT.

OPEN LETTERS.

Choice Fruits.

At the New York State Fruit Growers' meeting, held at Rochester, in January, 1902, the following replies were made through the Question Drawer, as to the best varieties of new fruits recommended for profit. In apples Mr. Willard and Mr. Woodward recommended Rome Beauty; G. T. Powell mentioned Hub. Nonsuch and Sutton Beauty; B. J. Chase named Twenty Ounce; Mr. Wadham and M. Hooker spoke of Jonathan. In peaches Mr. Willard mentioned Red Cheeked Melocoton; Mr. Woodward recommended Niger. In Japan Plums Mr. Willard claims Burbank and Red June; one member recommends Satsuma. In European plums Mr. Hooker recommends Reine Claude, Lombard, Damson, Diamond, German prune and Fellenburg or Italian prune. In pears Mr. Hooker recommends Beurre Bosc, Bartlett, Kieffer, Duchess and Beurre d'Anjou. In cherries Mr. Willard recommends Windsor. In blackberries Prof: Beach recommends Rathbun; Mr. Kellog recommends Mersereau. In red raspberries Mr. Kellog mentioned King as the best early.

Fonthill. E. MORRIS.

Spraying.

Now is the time every fruit grower should have his spraying outfit and material all ready for use and on the first mild day, just as the buds are beginning to open, should give his orchard a thorough spraying. If one observes carefully they will find the bud moth present. and although care must be taken to use the proper quantities of ingredients. this month and the next is the time when most of these mites can be destroyed, for when the foliage is on the trees it is more difficult to get at them. I have found this time better than later on, especially for scale insects. We are using whale oil soap with blue stone for the first application, and will add Paris green for the next and subsequent applicatians. I am also using crude oil on some trees that are troubled with bark lice, as it seems more penetrating than the soap. I tried it on a few trees last year with satisfactory results.

R. L. HUGGARD, Whitby.

OUR AFFILIATED SOCIETIES.

Paris.—An excursion is proposed by this society to visit the O. A. C., Guelph, certainly a good example for all our horticultural societies, who would find much to interest them in the extensive greenhouses in Prof. H. L. Hutt's department.

The society also donated some thirty trees and forty shrubs to be planted on the new South Ward School grounds, which command a fine view of the Grand River.

Orillia.—The joint committee of the Town Council, Board of Trade and Horticultural Society has addressed a circular to the citizens of Orilia asking their co-operation in beautifying the town, by planting shade trees, caring for the boulevards, refraining from throwing waste paper in the streets, and improving the appearance of private property. The committee also calls attention to the Town Council's offer to place stone along the front of boulevards, where stone is provided by property owners, which can be done at about fifteen cents a foot; also to the offer to plant shade trees at twenty-five cents apiece.

London.—London, Ontario, is taking up the movement for beautifying the city, on lines similar to what has been proposed in Orillia: The movement to improve the appearance of the city by yet better kept lawns and gardens is taking root rapidly. Yesterday morning the Rev. Dr. Bethune called on Mayor Beck and said that the committee appointed by his Worship to prepare conditions for the proposed competition had already conferred and would soon have their report ready. They will include therein only those who do not employ assistance in the care of either garden or lawn. Citizens who can afford to secure help, they think, should not need any special stimulus. There is talk, Dr. Bethune said, of changing the name of the London Horticultural Society to that of the City Horticultural and Improvement Society. Members are now actively at work along this line. Some have taken up the effort to secure the consent of factory owners to the planting of vines that will eventually hide bare brick walls; others to get the consent of the civic authorities to the placing of window gardens in public buildings, and so on. Mayor Beck believes the City Council another year might give a grant of $100 or $200 to the work of the society.—*Free Press.*

Local Fruit Growers' Associations.—The Cobourg World says: Last week local branches of the Ontario Fruit Growers' Association were successfully organized at Grafton, Colborne and Brighton. The object of these local associations is the dissemination of information in reference to the fruit industry of this district so that our people may become more conversant with the best and most profitable methods of planting, cultivating, growing, harvesting and disposing of their garden and orchard products. Each member receives the valuable reports issued annually by the Fruit Growers' Association and Experiment stations, also the horticultural bulletins sent out by the Department of Agriculture from time to time.

The officers of the new association were elected as follows: Grafton—President, W. Winter; Vice-President, Jno. L. Grosjean; Secretary-Treasurer, T. Hoskin; membership, 20. Colborne—President, N. T. Lowe; Vice-President. H. Purdy; Secretary, G. M. Peebles; Treasurer, K. J. Rutherford; membership, 35. Brighton—President, Jno. Jones; Vice-President, H. J. Scripture; Secretary-Treasurer, J. D. Sanford; membership, 40.

Pleasant, practical and profitable addresses were given at each meeting by Mr. G. C. Caston, of Craighurst, President of the Ontario Fruit Growers' Association; Mr. Elmer Lick, Oshawa, Director for District No. 6; Major H. J. Snelgrove, Cobourg, Director for District No. 5; and Mr. H. G. Vroom, Middleton, Annapolis County, N S. Mr. P. J. Carey, Cobourg, Dominion Fruit Inspector, was also present. A demonstration in orchard practice, pruning. grafting, etc., was given at each place.

BOOKS FOR FRUIT GROWERS.

ALLEN—Cabbage and Cauliflower	$ 50
Bulbs and Tuberous Rooted Plants	1 50
BAILEY—The Nursery Book	1 00
Annals of Horticulture	1 00
Annals of Horticulture	1 00
Principles of Agriculture	1 25
Principles of Vegetable Gardening	1 25
The Pruning Book	1 50
Principles of Fruit Growing	1 25
Field Notes on Apple Culture	75
The Forcing Book	1 00
Garden Making	1 00
Horticulturist's Rule Book	75
Plant Breeding	1 00
CURTIS—Left Overs Made Palatable	1 00
ELLWANGER—The Rose	2 25
FISKE—Prize Gardening	1 00
GOFF—Principles of Plant Culture	1 00
GREINER—Celery for Profit	20
Practical Farm Chemistry	1 00
How to Make the Garden Pay	2 00
The Young Market Gardener	50
The New Onion Culture	50
GREEN—Vegetable Gardening	1 25
HENDERSON—Gardening for Pleasure	1 50
Hand Book of Plants and General Horticulture	3 00
Practical Floriculture	1 50
HEXAMER—Asparagus for home use or market	50
HATTON—Secrets of Rose Culture	50
HILLHOUSE—House Plants and How to Succeed with Them	1 00
HEINRICH—The Window Garden	50
JOHNSON—Fumigation Methods	1 00
KING—The Soil	75
LONG—Ornamental Gardening for Americans	1 50
MATTHEWS—The Beautiful Flower Garden.	40
MORSE—The New Rhubarb Culture	50
PEACOCK—The Dahlia	30
PARSONS—The Dahlia	1 00
ROBERTS—The Fertility of the Land	$1 25
TAFT—Greenhouse Management	1 50
Greenhouse Construction	
VOORHEES—First Principles of Agriculture.	1 00
WAUGH—Plum Culture	1 50
Harvesting, Marketing, Storing Fruit	1 00
Landscape Gardening	50
WEED—Spraying Crops	25
Insects and Insecticides	1 50
Fungi and Fungicides	1 00
WEIDENMANN—Beautifying Country Homes	10 00

Orders for any of the above books, accompanied by the Cash may be sent to Editor CANADIAN HORTICULTURIST, Grimsby, and the books will be forwarded at above prices, postpaid.

HIGH GRADE **FERTILIZERS**

SAMUEL H. CULP, Beamsville —Have used your fertilizers the past season; will say I am well pleased with results for the following reasons:

(1) My grapes were harvested a week or ten days earlier.

(2) Berries larger and sweeter and ripened more even.

(3) Vines in better shape for next year's crop; also used on pears with good results; pears smoother and more even in size.

Am pleased to place my order for another ton for this season.

Prices, catalogue and information on application. A good, thorough farmer wanted in every section to represent our high-grade fertilizers in any territory not already taken up.

THE W. A. FREEMAN CO., Limited
Hamilton, Ontario.

NITRATE OF SODA
The Standard Ammoniate Fertilizer for
MONEY CROPS
Corn, Cotton, Fruit, Grass, Sugar Beets and Wheat.
Send post card for formulas and free bulletins.
WILLIAM S. MYERS, Director,
12 John Street, New York.

LANDSCAPE GARDENING

PLANS for Parks, Cemeteries, Home and School Grounds prepared by
CHARLES ERNEST WOOLVERTON
Landscape Gardener,
Grimsby, Ont.

Surveys made and working drafts prepared on reasonable terms
Improvements intended to be executed in the spring of 1903, should be planned out this summer or fall.
CORRESPONDENCE SOLICITED.

PAGE METAL GATES are so low in price no one can afford to use wooden ones. Light, and yet strong enough to support a heavy man on the end while he swings around the circle without causing them to sag. They are neat in appearance, will last a lifetime. Will not sag nor get rickety. They are supplied with latches which allow them to be opened either way and are self acting. The only good metal gate that is low enough in price for General farm purposes. We also make Farm and Ornamental Fence, Poultry Netting, Nails and Staples. The Page Wire Fence Co., Limited, Walkerville, Ont.

FIG. 2333. BOUGANVILLEA GLABRA.

THE
CANADIAN HORTICULTURIST

JULY, 1902

VOLUME XXV NUMBER 7

BOUGANVILLEA GLABRA

VAR. SANDERANA

BY

A. ALEXANDER

PRESIDENT HAMILTON HORTICULTURAL SOCIETY

THIS plant, which is shown as the frontispiece to our magazine this month, is creating quite a large amount of interest among flower dealers in many parts of our country because of the ease with which it is cultivated, its great beauty and long period of blooming, as well as its lasting qualities when cut for table decoration.

When given liberty, by being planted out in the bed of a conservatory, it will grow to a length of twenty feet or more if desired, and be covered with its beautiful masses of rosy red bracts for at least six months of the year. The plant from which the photograph was taken began to bloom last November, and is still covered with masses of bloom. So persistent is it in flowering that the stumps, left in cutting the graceful wreaths of blossoms, break out afresh, and are soon a rosy mass.

It makes a fine pot-plant also, and a very small one will bloom for a long time, and on this account it is beginning to figure largely among our Easter plants.

It is named after Bouganville, a celebrated French navigator who flourished at the latter part of the 18th and beginning of the 19th centuries. It is common in the forests Brazil and Argentina, as well as some parts Southern Europe, where it is used to cover the fronts of cottages.

It is easily propagated by cuttings in sand.

The plant referred to above is trained to the centre pillar of the conservatory, then right and left to the beam 15 feet in one direction and 12 in the other, and from these two arms hang down hundreds of slender twigs covered with beautiful dark glossy leaves and multitudes of flowers. I know of no insect enemy infesting it, which is much in its favor. It is altogether a most desirable addition to make to a greenhouse or conservatory, especially if it can be planted in a bed. It is not at all particular about what soil it grows in, and it is no uncommon thing for me to have to cut canes of nearly 10 feet coming from the root in very sandy soil.

Notes and Comments

SMALL SIZED FRUIT FARMS

WE are more and more convinced that many of our Ontario fruit farms are too large for the best results. How often do we read of the immense crops of strawberries taken from a small garden, where every inch of ground received the best of cultivation and was enriched in the highest degree. Eight thousand quarts to the acre are seldom harvested in field culture, but frequently the small plot oversteps this exceedingly remunerative yield; and we say, how is it that we get 2,000 quarts of berries from the quarter acre garden, and sometimes only same quantity from a whole acre under field culture?

On the 10th ultimo we visited a fruit grower who had only one acre and a half of ground, and nearly the half acre was occupied with house yard, wood shed and barn. The rest was given intensive cultivation, mostly by hand. It was planted with peach, cherry and plum trees, with currants, raspberries and strawberries between the rows and under the trees. In 1901, a year when some of the large fruit farms barely paid expenses, he sold about three hundred dollars worth of fruit off his small garden, besides having abundance for his own table. All this he had done, without losing much time at the nursery at which he was employed. This man had been in Canada some years cultivating a fifty acre farm, which he found too hard work for his advanced years. He is greatly pleased with the change in his life, and says "I actually take in just about as much cash off my garden as I did off my farm."

Now this might not be the result in every case. Some men are born gardeners, and succeed at the business, while others would sadly fail. Besides conditions count, and our friend is situated along one of those electric trolley lines which gather up the fruit at his door, and carry it to the city; and he is saved all expense of teaming his fruit.

Of course it is impossible for the 100 acre man to get such results from fruit growing, else he would soon be a millionaire. Usually if he gets a gross average of $40 per acre, year after year, he is counted to be doing very well, for he has off years when crops fail, or gluts in the markets which stagger him, and prove that to succeed it is *quality* and not always *quantity* that counts.

CANKER WORM

THREE ounces of Paris Green to 40 gallons of water, as recommended on page 214, we find is not effective in killing this worm. Trees so sprayed were still full of them and hung down by threads almost as numerous as ever; so we doubled the dose, with eight pounds of lime to the barrel, and this worked like a charm.

THE PLUM CURCULIO

"THE plum curculio," says Mr. M. Pettit of Winona, "is my most persistent enemy, and I am anxious to spray it just at the time when the poison will do the most good. I have been advised," said he, "to wait until the blossom has fallen, and that there was no use treating the plum trees until the young plum was exposed." In our opinion this advice was bad. The young and tender foliage of the plum tree cannot be poisoned too early, for the little Turk

enjoys a bite from a tender leaf before oviposition, and if you can destroy the mother, you destroy her offspring. So we advise spraying for plum curculio much earlier than is usual.

"Well," said Mr. Pettit, "I believe you are right, for I waited for the fall of the blossom of my Washington plums, as advised on very good authority, that of a horticultural expert, an entomologist indeed, and by that time I found there was scarce one of those plums that was not stung." Now science and practice should agree; but unless the student is a practical observer, his theories often fail, and the theorist should work out his plans in an orchard and not always in a laboratory.

THE BORER

THE borer should be guarded against this month, if indeed he has not already done much injury. The flatheaded borer often completely girdles a tree, although worst on weak growing apple trees. To promote a vigorous wood growth is therefore a most effectual method of treatment. Indeed it is the neglected orchard in which we find these pests thriving, just as lice thrive on neglected chickens, and fleas on poorly kept dogs. But when once the borer is in the orchard he must be routed even if stern measures are necessary; and the knife must cut out and destroy the flatheaded larvae. Some plum trees (Domestica) at Maplehurst, are badly affected, and must first be cut to remove the larva and then washed with whale oil soap and washing soda (dissolved) as a protection from its further attacks.

THE EXPORT OF TENDER FRUITS

SOME Winona fruit growers are anxious to join in the export of early apples, pears and peaches, to Great Britain, in cold storage. Mr. Pettit says he has already had some correspondence with Mr. Alex. McNeill, Department of Agriculture, Ottawa, into whose hands the superintendence of this work will fall during the present season, and who says it is his intention to encourage this trade.

BEST TOOLS FOR THE ORCHARD

THE best tools for orchard cultivation are no doubt the cheapest, and it is always a waste of money to work with a poor one. In our vineyards and orchards the hoe and the spade well sharpened were at one time indispensable; but, since the introduction of the grape hoe, the horses can do nearly all the work, and leave very little hand work. This enables the orchardist to cover a large area with comparatively little outlay for hired help, a most important item when waiting for an orchard to reach bearing

FIG. 2334. GRAPE HOE.

age. The grape hoe is drawn by one horse and easily guided so as to clear the ground closely about the rows of trees and vines. Another most useful implement introduced only of last years is the disc harrow, by means of which land, having once been plowed or which is not too hard, may be quickly worked up for any purpose. Those provided with an extension head, as shown in the illustration, will be still more useful than the discs made for ordinary agricultural work. "The disc harrow," says Van Deman, in Green's Fruit Grower, "is used more generally and with better effects in orchards than any other implement. Plows dig too deep, disturbing the roots, and are not used in orchards as formerly, except to

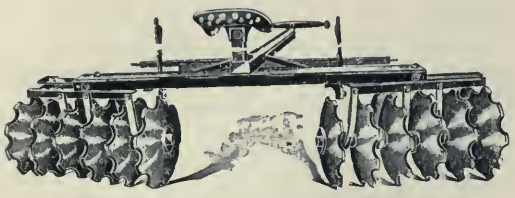


FIG. 2335. DISC HARROW.

turn sod on crops grown as fertilizers. The disc harrow goes over the ground much more rapidly than the plow, and does the work of plowing and harrowing at the same time. It is not desirable to cultivate deeply in the orchard, vineyard or berry field; in fact, it is injurious. One great object in cultivating an orchard or any kind of fruit plants, trees or vines, is to preserve continually two or three inches of loose soil over the entire surface, which acts as mulch, holding moisture in the soil and preventing evaporation. This cover of loose soil over the earth produces the same result as though the surface were covered with layers of straw. All you need to do is to move this soil with a disc harrow, or occasionally with an Acme harrow, at least once in two weeks, or once after each rain. Disc harrows are made to be adjusted so as to run at one side of the team, running closely to the rows of trees or other objects, without crowding the team or whippletrees onto the row. Every fruit grower or farmer must have a sharp tooth harrow. These are similar to the old style of harrow, excepting that the frames are of iron, and that they are made to cover a wider surface. No one should be satisfied without the best plow made, and it should never be used without a good sharp point. There are numerous one-horse cultivators made in various styles, and constructed so that by changing the teeth or other parts, one cultivator can be made to do many kinds of work, throwing the dirt towards the plant or away from it."

DESTROY THE FALLEN FRUIT

ALTHOUGH spraying for insect pests is a most important means of destroying them, success is not attained without the employment of every means available. Wormy fruit, allowed to remain as it usually does in great quantities under the tree, forms just so many feeding places for young larvae of codling moth and curculio, which soon develop into native insects, ready to fly and sting other fruits and cause them to drop also.

Poultry, pigs and sheep will all help in the destruction of the infested fruit with its worm inhabitant, but, if these friendly animals are not at hand, it would pay to gather up the fallen fruit and destroy it. Brazelton in Western Fruit Grower speaks very decidedly of the excellent results attained by attention of this kind. He says:—

"After an experiment covering the past three years of picking up and disposing in some way of fallen fruit in our orchards, we find that our fruit becomes better and better each year, and our faith in spraying as the sole preventive of insect and fungus pests considerably lessened. Yet we do not decry spraying, but on the contrary we most heartily believe in it, and practise it. As a result of our observations, however, we are more and more of the opinion that, where both spraying and removing the fallen fruit are thoroughly done, that the latter is of very nearly as much benefit as the former. We believe that all such stuff should be hauled away to some creek, or other body of water, until the fruit attains sufficient size to be merchantable, after which the receipts from sales will about cover the cost picking up and disposing of it. We figure that, if the returns from sales balance the expenses, we realize a good profit in the increased quality of our No. 1 fruit. Spraying alone will not do, but every way of destroying the insects and fungi that is prac-

tical should be employed. We intend to try banding the trees in the future, and have no doubt that this will prove beneficial. If those who pick their apples and pile them on the ground in the orchard, will cover the piles with burlap, or any other old cloth, they will be astonished to see the number of worms that will collect on the under side of the cloth. Thousands of worms could be destroyed by dipping these rags in boiling water every few days. These worms will also be found in considerable numbers around the hoops and between the staves of barrels in which apples have been stored for the winter, and they can also be destroyed with boiling water. As evidence that this work pays we submit the fact that our fruit always sells at a premium this year of from 50 to 65 cents per barrel, and the proportion of firsts to seconds and culls is greater than it used to be."

GATHERING PLUMS

PROF. WAUGH, of Burlington, Vt., gives the following pointers under this head. Plums which are used for jelly should be picked as soon as they begin to color, and long before they are mature. Those which are picked for canning should be taken in the early stages of maturity, while those which are destined for dessert or table use should be allowed to become dead ripe before they are removed from the trees. Plums for shipment to market must be picked about as soon as they are well colored, some varieties even earlier. They must be taken from the trees before they show any tendency to soften. Many varieties, particularly of the Japanese group, will bear earlier picking and will ripen up well in the fruit packages in which they are shipped to market.

MARKETING

VARIETIES of plums which crack badly, or become soft in ripening, are not suitable for market, especially when long shipments are to be made. The best prices for plums are usually realized late in the season, since this fruit is used chiefly for canning, and since housewives prefer to do the canning as late as possible, after hot weather is passed.

QUANTITY OF FERTILIZER FOR EACH TREE

MAYNARD, of Massachusetts, gives three formulas for the treatment of apple orchards on land that cannot be cultivated and the amount of fertilizer to be applied upon the growth of the trees. Of course such trees, standing on sod, would need more fertilizing material than they would require if the land were cultivated. The following shows the amounts per tree grown in sod:

(No. 1)	1 lb.	to	5 lbs,	Nitrate of Soda.
	1 "	"	"	Sulphate of Potash.
	2 "	"	10 "	Acid Phosphate.
(No. 2)	1 "	"	5 "	Nitrate of Soda.
	10 "	"	25 "	Good hard wood ashes.

(No. 3) Stable manure, 5 to 20 large forkfuls, apples in fall or winter, and the same amount of potash and phosphoric acid, or wood ashes as in formulas No. 1 and 2. Orchards that are making less than from six to ten inches of new wood each year, are in no condition to bear fruit that will be satisfactory in respect to either quantity or quality; yet it is evident that more than half of our apple orchards are lacking in vitality as a result of neglect.

THE CHERRY HARVEST

THE cherry harvest is now becoming important in some sections in the Provinces. In that portion bordering on the south shore of Lake Ontario, and the north shore of Lake Erie, and indeed nearly all the east shore of Lake Huron, the more tender varieties of the sweet cherry class seem to be worthy of a place in a commer-

FIG. 2336. EARLY PURPLE.

cial way, but even in these sections a frost at the end of May or beginning of June is often fatal to the crop.

The earliest cherry of this class is the Early Purple, which occasionally gives a full crop at highest prices, though a cherry of only medium size and ordinary quality. Some old trees have made a good record for productiveness, and made the owner a fine return, but as a rule the birds take a good share of the crop, and, if gathered before ripe enough to please the appetite ot

FIG. 2337. WINDSOR.

the birds, they are but skin and bones, and not deserving the name of Purple. In England it is customary to protect valuable cherry trees from the birds by means of large nets, which are spread over the trees, a good suggestion for us if we want to succeed with certain varieties of oxhearts.

This netting is sold very reasonable, as we note in a recent issue of the Journal of

FIG. 2338. LATE DUKE.

Horticulture several such advertisements as the following :

Garden Netting.—Small mesh, keep out the smallest birds, oiled and dressed ; will not rot if left out in all weathers. 105 yards by one yard wide, 72 cents; by two yards wide, $1.44; by three yards wide, $2.16, and so on to any width. G. H. Netting Works. Rye.

Edge, of Maryland, says :—

"For protecting cherries from the birds I bought a lot of damaged mosquito netting, and sewed it into a piece six yards square. This I put over an Early Richmond tree and drew it together at the bottom. The sun shines through, but the birds are kept out. It stays on only a few days while the cherries are ripening, and is then taken off and laid away for another year."

In our commercial orchards, however, we will find it best to plant those which are

not subject to the attack of the birds, as for example the Bigarreau class, which have a flesh too firm for their beaks. Without attempting to make reference to the other desirable varieties of sweet cherries, we show two of our latest market kinds, the Elkhorn and the Windsor. This latter has been introduced with a great flourish, and since it is of Canadian origin, we hope it may prove the best of its class. We have planted a few hundred trees, being so well pleased with the first samples borne in our experimental plot; but a few years' experience may be needed to determine whether it, or the Elkhorn, is the more valuable for main crop. The latter has been grown for forty years at Maplehurst, and often bears a prodigious crop of fine dark fruit. Both ripen about the middle of July when other varieties are out of the market, and consequently bring good prices. Both are subject to rot in wet seasons, but possibly we can control this by treatment with copper sulphate.

The English Morello is the best late sour cherry. It is a famous cropper, dark in color, and will hang long after it is ripe. In the Western States it has been sold under the name of Wragg, and no doubt some nurserymen have been making money out of fruit growers by selling this old variety under a new name. We have them both side by side in our experimental plot, and can see no difference whatever.

FIG. 2339. ELKHORN.

FIG. 2340. ENGLISH MORELLO.

Of cooking cherries none can compare with Dukes, a class of semi-sour, red cherries, that cannot be excelled for sauce and pies. The May Duke is a familiar example of this class, which is frequently ready for use the latter part of June. Among the others of the class, we have the Olivet, a sparse bearer, and most

FIG. 2341.

excellent in quality, and the Late Duke which considerably prolongs the season, though otherwise very similar to the well known May Duke.

MULCH FOR APPLE ORCHARDS

HITCHINGS, of Onondaga County, N. Y., is an ardent advocate of mulching for apples in preference to cultivation. Instead of ploughing his orchard he cuts the grass and places it about the trees. This he claims answers a double purpose; it saves the fruit from bruising when it drops, and it retains the moisture in the soil, and this latter is surely as good as a dust mulch made by cultivation, and much less expensive. He claims also that it is superior to Mr. Woodward's method of growing an orchard in sod, and keeping sheep in it to fertilize it, and eat up the fallen apples.

In a recent issue of the R. N. Y. Mr. Hitchings writes:—

Mr. Woodward gives an estimated gain of $6 per acre in fertility and $8 in pasturage. During the time his sheep were making this $14 gain per acre eating fallen apples, I was picking up from the grass mulch the Astrachan, Oldenburg, Wealthy and Gravenstein, practically uninjured, and selling them for top prices, for these kinds of apples should be left on the trees as long as possible to be at their best, Those picked up brought at least $60 per acre, pretty expensive sheep food. I think, furthermore, that the yield per tree was increased by leaving the apples until fully matured. I fight the Codling moth by spraying; have had no trouble with the apple maggot; am saved the expense of building fences to enclose the sheep, and can employ the time that would be spent in caring for the sheep in growing strawberries, which pay one much better.

My first experience in apple growing was watching the sheep to keep them from girdling some young trees set among the older ones. I came to the conclusion then that growing fruit trees and sheep were a poor combination, so first the sheep went, then the hogs, and then the cows, all but one, and I have never missed them, financially, out of all the stock put together. For a full-grown orchard where the roots have full possession of the soil, with trees headed high and strictly commercial varieties, Mr. Woodward's method is all right; but for a young orchard and a local market I differ with him. After all, whatever method is followed, the man at the helm is the deciding factor between success or failure.

MULCH FOR PEAR TREES

MR. E. C. BEMAN, of Newcastle, Ont., has for years practiced this treatment of his pear orchard, with excellent results. The accumulated cut grass of many years deeply covers the ground about the trees and protects the fallen pears from injury, and through gradual decay is furnishing fertility to the soil. Providing material is at hand in sufficient quantity no doubt mulching the ground under orchard trees is commendable, and in heavy clay soil much less laborious than constant cultivation.

THE ROXBURY RUSSET

THE Roxbury Russet has more value than it usually gets credit for. Only recently, May 20, 1902, this apple was worth $4.00 a barrel in the markets, and no apple comes out of the cellar in such excellent condition in the month of May. The tree is spreading, reminding one of Greening, and in its appearance the fruit often resembles that old variety. Not usually on the list for planting, the Roxbury has been little considered, and yet no apple we grow may be counted upon to come out in the spring with a better showing. It has one fault, in that it is very subject to Codling moth.

MICHEL, THE FIRST EARLY STRAWBERRY

BY general consent the commercial growers of strawberries in Ontario, give this the first place for earliness. They plant Michel and Williams to cover the season, the latter for main crop. This season Michels were offered in Hamilton market about the 1st of June; they were grown in a specially favored location, but the crop generally was having its first picking between the 5th and the 9th; while as yet no other variety generally grown was showing a ripe berry.

This characteristic makes Michel a profit-

FIG. 2342. MICHEL.

able market berry. It often brings 10 to 12 cents a quart, while the late ones only bring 6 or 7; and when you count off three or four cents for packages, growing and picking, you have a net profit of say 7 cents a quart for Michel opposite 4 cents for Williams. It would require a big difference in yield to make the latter the more profitable. On some soils Michel does very poorly, giving a very light yield and, after the first picking, very small berries. It is by no means the "Lazy Man's Berry," but given proper soil, cultivation and manure, a good yield can be secured.

On the 10th ultimo we took a photograph of a box of Michel, which gives an idea of the berry just as it came from the patch. It was selling then at ten cents a box. Michel has a perfect blossom, and is thought to be a chance seedling from Crescent on the grounds of J. G. Michel, Judsonia, Ark. The berry is sweet in flavor and much valued as a table variety.

The Sunrise is being grown for first early berry, by some growers, in place of Michel; and they say it is on the whole rather more productive than Michel, and if anything averaging a little larger. From the experience of others however we infer that this superiority is purely local. We shall be pleased to have the opinion of some of our readers.

A BOYS' INSTITUTE

THE Broadview Boys' Institute, under the management of C. J. Atkinson, affords invaluable opportunities to city boys who have a taste for country life. Here they are not only associated together as a kind of club, with opportunities of engaging in healthful sports, but they are privileged to have special courses of study fitting them for their life work. A most important adjunct is the practical work afforded to each boy, wherein his own individuality is allowed full play. The large garden is laid out in the form of a township, with farm for each boy, represented by a plot of ground twenty by forty feet in extent, for which he pays taxes by a certain number of hours' work a week in the general kitchen garden, otherwise all the proceeds of the garden are his own. The boy farmers elect their own reeve and councillors; inspectors are appointed who view the condition of the farms and report cases of neglect. Tenants convicted of neglect are ejected, and their farms leased to other boys.

A walk through the garden on the 16th of June was full of interest. Each farm was named, and some were kept with scrupulous care, while others showed evidences of neglect; but on the whole the interest in this part of the work on the part of the boys was most marked, and the training must be of the greatest benefit.

Fig. 2343. Humboldt Blackberry, one of Mr. Burbank's "New Creations."

MEN WHO HAVE SUCCEEDED—IV

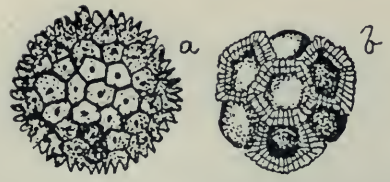
LUTHER BURBANK CONTINUED—HIS WORK—A CHAPTER OF SUCCESS

THE RESULTS attained by Luther Burbank have been so numerous and wonderful, that we must make special reference to some features of his work.

Methods.—Starting out with a theory contrary to the usual one of fixity of species, he held that the Universe is "eternally unstable in form, eternally immutable in substance. There is," says he, "Not one weed or flower, wild or domesticated, which will not, sooner or later, respond liberally to good cultivation and persistent selection. What can be more delightful than to adopt the promising individual from among a race of vile, neglected weeds, down-trodden and despised by all; to see it gradually change its sprawling habits, its coarse, ill smelling foliage, its insignificant blossoms of dull color to an upright plant with handsome, glossy, fragrant leaves, blossoms of every hue, and with fragrance as pure and lasting as could be desired. Weeds are weeds because they are jostled, crowded, cropped and trampled upon, scorched by fierce heat, starved or, perhaps, suffering with cold, wet feet, tormented by insect pests or lack of nourishing foods and sunshine. Most of them have no opportunity for blossoming out in luxurious beauty and abundance. A few are so fixed in their habits that it is better to select an individual for adoption and improvement from a race which is more pliable. This stability of character cannot often be known except by careful trial, therefore members from several races at the same time may be selected with advantage; and the most pliable and easily educated ones will soon make the fact manifest by showing a tendency to "break" or vary slightly, or perhaps profoundly, from the wild state. Any variation should be at once seized upon and numerous seedlings raised from this individual. In the next generation, one or several even more marked variations will be almost certain to appear, for when a plant once wakes up to the new influences brought to bear upon it, the road is opened for endless improvement in all directions, and the operator finds himself with a wealth of new forms which is almost discouraging to select from as, in the first place, it was to induce the plant to vary in the least."

Cultivation and environment are, in Mr. Burbank's view, capable of producing wonderful changes in the common forms of plant life, and his first aim, in consistency with his theory, is to so treat the species to be improved that it will have extraordinary vigor stored up, which will sooner or later be manifest in its breaking away in some details from its usual characteristics. When this stage has been reached the greater possibilities are open by crossing with other species, in order to breed into the subject such traits as shall bring about the ideal fruit or flower. Nor has Mr. Burbank confined his operations to individuals of one genus to pollinate individuals of another, but he has succeeded in crossing plants belonging to entirely different genera, thus producing true hybrids.

Since Botany has become one of the school subjects, no one needs to be told how plants are pollinated by applying the pollen grains



(*a*) Morning Glory. (*b*) Black Oyster Plant.

(*a*) Hollyhock. (*b*) Passion Flower.

FIG. 2344. POLLEN GRAINS (HIGHLY MAGNIFIED).

of one flower to the pistils of another, either by natural or artificial means. These grains, so alike to the naked eye, reveal great difference under the miscroscope, as may be seen from our illustrations. Mr. Burbank gathers his pollen about a day in advance, and after drying it carefully, shakes it out on a watch crystal, until he gathers a sufficient quantity. Properly dried pollen he finds, retains its efficiency about a week.

Prof. Wickson in the Sunset, says :—

"The preparation of the blooms of the seed parent consists in removing about nine-tenths of the bloom buds when they begin to show the petal color, leaving, in the trees which bloom freely, about one in ten of the natural bloom to be operated upon. This is for convenience of operation and to avoid the setting of too many seeds for the tree to be properly perfect. Before the petals open, each of these buds is carefully cut into with a small sharp knife blade, in such a way that the petals and a part of the sepals and all the attached anthers are removed as the knife makes its circuit, leaving the pistils exposed but uninjured by the operation. The removal of the corolla balks the bees and other honey-seeking insects, either by the loss of color or by absence of a lighting place, or both. The buzzing Archimedes finds no place for his lever and wearily goes his way, the honey unsipped and the pistil free from contact with its pollen-dusted body. Mr. Burbank finds it, in most cases, unnecessary to cover the emasculated bloom to avoid intrusion of undesirable pollen by insect agency.

He chooses for pollination the time when the first hum of the bees is heard in the trees. He finds all conditions at that time most favorable, and believes that the pistil is then in in its most receptive state. The instrument of pollination is the finger tip. Applied to the dusted surface of the plate, either by a mere touch or a slight rubbing, enough pollen adheres. The finger tip is then quickly touched to the pistils of the prepared blossoms one after another. They welcome the pollen and the fructifying agency begins at once its journey to the ovule. No matter what comes now, on the wind or otherwise, the opportunity for outside pollen has passed. The touch of the finger has covered the stigma with the chosen element and sealed it safe from further intrusion. In his choice

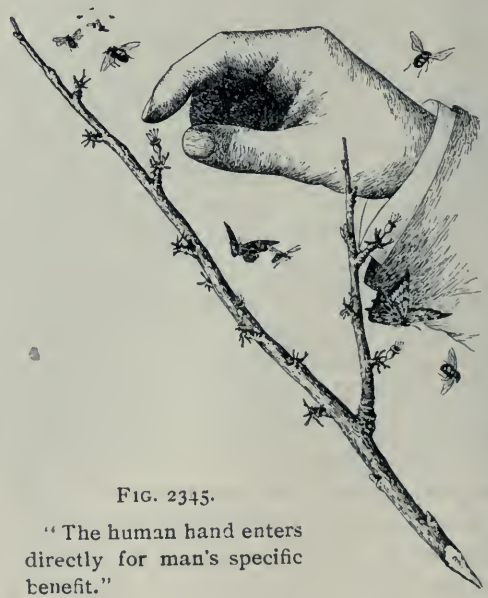


FIG. 2345.

"The human hand enters directly for man's specific benefit."

FIG 2346. HYBRID PLUM, GOLDEN, AND ITS MALE PARENT, ROBINSON (both life size).

of the unaided hand as the instrument of pollination, Mr. Burbank has not only vastly simplified and made more expeditions the act of pollination, but there is also involved a profound tribute to the superiority of the trained hand in directness and delicacy for what lies within its unaided scope. Recourse to instruments and appliances is often essential, but in many lines of human effort, the direct contact of the finger tip works.

The seed resulting from such pollination is of course gathered with greatest care, and from these seedlings are produced perhaps thousands, of which only an occasional one is selected as giving promise of value.

Results.—One object in view was to obtain varieties that would be more productive ; and by mingling the native American with Japanese plums, a new era in plum culture has been introduced. For example our illustration shows one of the new hybrids, the " Golden," a hybrid between the Robinson (American Chicasaw) and the Japanese Sweet Botan. (Fig. 2346).

An example of the successful crossing of different genera, usually thought impossible, is seen in the blackberry and raspberry crosses, some of which are likely to prove of value to the fruit grower, one of which is shown in Fig. 2343, a hybrid berry, grown from seed on improved California Dewberry, fertilized by the well known Cuthbert raspberry. Wonderful changes in color, flavor and aroma have been secured, as for example, the Bartlett plum, and Pine-apple quince ; and still more surprising changes

FIG. 2347. VINE OF BOUGANVILLEA. (See frontispiece.)

FIG. 2348. ICEBERG, THE NEW WHITE BLACKBERRY.

in the natural structure of fruits, or in the case of the stoneless prunes, in which the kernel is fully developed but naked, having no hard substance between it and the pulp. Changes in the seasons of ripening and the production of varieties which show remarkable precocity of fruit bearing have also been brought about, as for example a chestnut which was in fruit at eighteen months from from the sowing of the seed, the seedlings of which seem to possess similar precocity.

The new White Blackberry, the so-called paradox of the fruit world, which our Association distributed to its members this spring, is another example of the results of Mr. Burbank's success. Of this we give Mr. Burbank's own description, and hope soon to have its verification in all parts of our province.

"Owing to the somewhat unsatisfactory qualities of white blackberries so far known, the impression may have been entertained by some that no white blackberry could be as productive and hardy, with berries as early, abundant, large, handsome and delicious, as the best black ones.

"The well-known Lawton is when ripened, unsurpassed, and very generally known as the most productive market berry. Owing to its fixity of race, it will reproduce itself from seed almost exactly, and its seedlings will not be influenced, when raised from seed pollinated by other varieties, but it steadily imparts its good qualities when employed as the staminate parent. One of the great grandparents of 'Iceberg' was Lawton. The first generation of seedlings when crossed with Crystal White, was all black; the second also, though varying much in other respects; but the third produced this wonderful plant bearing the snowiest white berries ever seen.

"Very little attention was paid to the long rows of cross-bred descendants, until one day this berry was discovered, among its black relatives, with the canes bending in various directions with their load of delicious, snowy berries, which are not only white but so transparent that the seeds, which are unusually small, may be seen in the berries when ripe.

"Clusters, larger than those of Lawton;

FIG. 2349. SHASTA DAISY.

berries, as near as could be judged, were at least as large, earlier, sweeter, and more tender and melting throughout, though as firm as Lawton is when ripe."

Nor is it alone in fruits that this success is apparent but in flowers also many surprises have been brought about, and more are in expectation. For example the new Clematis, a hybrid of C. coccinea and C. crispa is a beautiful production. It is a vigorous grower and produces flowers in abundance from June until frost, with a blending of colors and shadings not elsewhere found in the Clematis family.

Another and still more recent is the Shasta Daisy, which is very popular. It is a hardy plant, and blooms for several months; the flower is large, fully three inches in diameter, and has three or more rows of petals of remarkable whiteness. This plant is a cross between the weedy American species of Chrysanthem Leucanthemum with the European and Japanese species, followed by a long period of rigid selection. Our engraving shows this Daisy reduced very much, with one of its insignificant looking parents in the background.

BURBANK'S "SHASTA DAISIES."

He took the little daisy
  By the dusty roadside growing;
He touched it with his magic wand
  And set its petals blowing.

From the dingy, ragged blossom,
  (A weed of the weeds that grow)
He made a stately flower,
  As white as the drifting snow.

No longer by the roadsides,
  But in garden and mansion and hall,
It sheds its queenly beauty,
  Admired and praised by all.

Santa Rosa, June 21.

It crowds each great occasion,
  To the fair bride lends its grace;
And its delicate purity softens
  Even the dead, cold face.

O, matchless Wizard, a lesson,
  We would learn of your patience and art,
Then we, too, may make flowers
  From the weeds of the human heart.

Taking the weeds of inaction
  That crowd in the dusty glooms,
By loving thoughts and words and deeds
  Make character's snowy blooms.

—*Press Democrat.*

FIG. 2350. BURBANK PLUM.

THE BURBANK PLUM

THE Japanese plums are proving of much wider adaption than was dreamed of on their first introduction. It was a surprise when a few years ago, they were proven to be hardy at the Central Experimental Farm, Ottawa, and still greater when the Burbank was found by Messrs. Hutt and Woolverton growing and producing fruit in quantity away up in St. Joseph Island, and even on the north shore of Georgian Bay, near the "Soo." Prof. Bailey finds an explanation of this hardiness in their Botanical relationship with our native American species, and notes herein another evidence that once there was a land connection between Northwestern America and Asia.

It was in 1885 that Mr. Burbank imported some plum trees from Japan and when they fruited he selected this as one of the best, and most worthy of propagation. In 1891 he sent samples to the Department of Agriculture at Washington, and Mr. H. E. Van Deman, Pomologist of the Department, described it in his report of that year, under the name of Burbank, in honor of the introducer.

Mr. Willard of Geneva, N. Y., was one of the first fruit growers to become convinced of the value of this plum for orchard planting, and stated before the Western New York Horticultural Society in 1894 that he had planted an orchard of 1500 trees, and knew of no plum that was more profitable,

FIG. 2351. BURBANK PLUM.

This plum has now been before us for about ten years and notwithstanding the great number of Japan varieties now sold by the nurserymen, none seem to hold a higher place for commercial purposes than the Burbank. Next to it in value comes the Abundance, which however is not a competitor, being nearly a fortnight earlier in season.

Compared with the Domestica class, the Japans are inferior in quality, but when fully ripened are fairly good eating. Like the Kieffer pear, the Burbank plum is making its reputation rather on quantity than quality.

DESCRIPTION.

Origin.—Imported from Japan in 1885, by Luther Burbank of Santa Rosa, California, and introduced to the trade in 1890. Named after the introducer, by H. E. Van Deman.

Tree.—Hardy ; a very vigorous wayward grower, making a very badly shaped tree, unless severely headed back and kept within bounds ; an early and most abundant bearer ; the fruit needs thinning to secure a good size ; class, Prunus triflora.

Fruit, two inches in diameter, nearly round, but slightly conical ; skin, orange yellow ground, shaded with red, and almost purple on side exposed to the sun ; very smooth, with a slight bloom ; peels easily when ripe ; suture traceable ; apex a small point ; stem half to five-eighths of an inch long, stout ; cavity deep, abrupt, with leather crack marks.

Flesh.—Color amber, texture juicy, tender when fully ripe ; flavor sweet, fairly agreeable ; stone, medium, pointed, cling.

Quality, good for cooking, fair for dessert. **Value,** first-rate for market. **Season,** end of August. **Adaptation,** general.

The following notes on this plum have been given us by some prominent fruit growers:

G. E. Fisher, Freeman, Ont.:—"I have not a large number of trees of this variety, but they have cropped well from the first, and the trees seem healthy notwithstanding the large annual yield. They are not loaded heavily this year. My crop of plums is light outside of Reine Claude, which have enongh for two crops. This is, I think, an exception as so far as I have observed the crop of Reine Claude will be light. My Burbanks, when the trees were not over-loaded, were good size but ripened unevenly. It is a good shipper. The tree is a spreading grower and requires to be heavily cut back to keep it in anything like a decent shape. Japan plums are all of an indifferent quality, but my trees have been hardy and the fruit profitable."

W. H. Dempsey, Trenton:—"Have found it hardy here as to wood, none has been held back. The blossoms have been injured once with a late frost. A very rapid grower. Then the branches come down making ill-shaped trees very productive. Three trees planted in 1896 produced 25 baskets of fruit last year, which sold well. I consider it one of the best commercial plums I have."

Mr. Harold Jones, Maitland:—"The Burbank plum is one of the best of the Japanese for this section, though it has the defect of all of its class in being tender in the fruit bud. In my experience the tree is a strong grower with hardy wood and will bear fruit with me on years that the Lombard bears, and is free from black knot and shohole fungus so troublesome on many of the European varieties."

Frank Metcalf, Blyth:—"I planted a number of Burbank plum trees five years ago. They are all doing well. They are very vigorous growers and perfectly hardy. They are heavy bearers. The fourth year some of my trees yielded over four baskets per tree. The fruit has a splendid appearance and is a ready seller, although the quality is only fair. Everything considered I can recommend it as decidedly above the average."

W. H. Bunting, St. Catharines:—"The Burbank is probably the most valuable of the Japan plums yet tested, and is the most largely planted. It is an annual and enormous bearer. To obtain a good sample it must be thinned severely ; owing to the abnormal and erratic growth of the tree it must be carefully pruned in order to keep it within bounds."

A. M. Smith, St. Catharines:—I consider it the best of all of the Japan type I have yet tested, and I have a dozen or more of them,

I have fruited it five or six years and find it an early and constant bearer, when not allowed to overbear. Its quality is good and it is a good shipper, and for a canning plum it is second only to Reine Claude, according to a report of expert canners made at Rochester N. Y., where a committee tested ten or twelve varieties not knowing what they were.

J. G. Mitchell:—Burbank is perfectly hardy here, and succeeds all through the County of Grey. A strong grower but very sprawling in habit. It is unequalled for productiveness. The fruit is a fairly good shipper, and has sold with us about the same as Lombards. In quality, I would place it about second or third among the Japans, but away behind as compared with our best European varieties.

G. C. Caston :—My experience with the Burbank is very satisfactory. It is ahead of anything in the plum line I have ever tested. There are better plums in point of quality, but my customers like it well for canning. In yield it is away ahead of all others. Last year I had five trees in bearing, that were only four years planted, and we picked twenty-six 12-quart baskets.

W. W. Hillborn, Leamington :—The Burbank plum is quite hardy with me. No other variety withstood the severe test of that cold winter, which destroyed so many peach and plum trees in this locality. I have twenty-four trees seven years planted. Last year I sold one hundred dollars worth of fruit from them. I find it one of the best shippers we have. It ripens just before the European varieties, therefore sells well. It is not of as good quality as some of the Japan and most of the European sorts. For this district it is one of the best money makers we have.

J. H. HALE ON THINNING FRUIT

IT IS the large, fine fruit that brings the profit; pays the mortgage, labor, fertilizer and cost of everything. To have high grade fruit we must thin. Fine peaches will bring from ten to sixteen times as much, besides not weakening the trees, as little peaches, which are nothing but seed, skin and wool. You have a law that will not allow you to sell milk which is more than so much water. We fruit growers have the advantage over every other producer: the more we water our stock the more they will pay us for it, and the more solids the less they pay us for it. Peaches that are 15 per cent. solids and 85 per cent. water are worth 50 cents, but those only 10 per cent. solids and 90 per cent. water are worth $3 or $4. I say, dose them with water; soak them, and this is easiest done by thinning and so getting large fruit full of water. When the manufacturer turns out damaged goods he is wise enough to keep them separate and sells them for whatever anybody will give. He means to have as few damaged goods as possible, however. We fruit growers have been producing a great many damaged goods, and then, instead of using good judgment and culling them out, we mix good ones with them and send them to market and sell the whole business for the price of damaged goods. We had to throw in the good ones. By proper thinning we can get the damaged goods down so we will not have more than 5 or 10 per cent. of inferior goods.

SOME POINTERS ON THE COLD STORAGE OF FRUITS

MUCH YET TO BE LEARNED — SOME SELECTIONS FROM A PAPER READ BEFORE THE WESTERN NEW YORK HORTICULTURAL SOCIETY LAST JANUARY

BY

G. H. POWELL

OF WASHINGTON

THERE is still much to be accomplished before the engineering of refrigeration will have reached its highest perfection. The relative merits of different systems of cooling, of different refrigerating media, of ventilating systems, a clearer knowledge of the methods of maintaining a desirable degree of humidity, and of a more even distribution of temperature most desirable for different fruits; and for the same fruit in different conditions, or of different varieties of a given fruit; the influence of sudden versus gradual cooling when fruit is put into storage, and of warming it up when it is removed; of tight versus closed packages, of the exact temperature at which different fruits will freeze, of the degree of maturity at which fruits should be removed from storage—these are a few of the points on which more exact information will need to be worked out from the standpoint of the storage men.

There is little exact information concerning the influence of cultural methods, and of various stages through which a fruit passes before it reaches the storage compartment, or its durability after it once reaches there. It is highly desirable in the interests of both storage men and fruit growers that we know more of the influence of young versus of old trees, of cultivated and well-fed versus uncultivated and starved orchards, of the character of the soil, the exposure and altitude of the orchards, of moist versus dry seasons, of the degree of maturity of the fruit, of the length of time that elapsed before the fruit should be stored after picking, and of many other factors that pertain primarily to the orchard, on the storage durability of the fruit.

I would not convey the impression that the refrigeration of fruits—especially of the apple—is a chaotic condition. On the other hand, the evolution of the system of refrigerating plants has been so rapid that modern storage houses carry enormous quantities of apples, of citrous fruits, and of vegetables for months in a satisfactory condition, and with little loss. I would emphasize the fact, however, that the definite knowledge of many of the phases of the storage question often leads to important losses in the storage houses, and to serious misunderstandings between storage men and fruit growers. There is a popular misconception among fruit growers that a low temperature will preserve fruits almost indefinitely, and the losses in the storage house are usually attributed to a faulty management of the storage plant itself. As a matter of fact, there are many factors that enter into the making of a fruit with good keeping qualities, and these factors operate while the fruit is growing, during the period between the picking of the fruit and its storage, and during the storage period.

In the future it is hoped that the investigations may be broadened so that eventually the various fruits and vegetables may be included in the experiments. During 1901 the principal winter apples and the Kieffer pear have been under investigation, an outline of which and a report of progress follows :

The Kieffer is the great business pear for the masses of planters and consumers outside of the Pacific coast district. It is grown in enormous quantities in the tidewater States, from New Jersey southward to Florida, in Texas, Pennsylvania, Illinois, Indiana and Ohio ; smaller, but important, plantings in New York, Western Michigan, Missouri, Arkansas, Kansas and in the Niagara Peninsula of Ontario, Canada, and still smaller orchard areas in nearly every other State where pears will grow. New orchards of Kieffer are still being planted throughout the Kieffer belt, though the extension is less rapid than previous to 1899.

The production of the Kieffer has become so vast that the cost of production is hardly realized when there is a general apple crop, and when peaches are abundant for canning. The bulk of the crop is used for canning while the fresh fruit needs to be sold in a comparatively short time. The over-production of the Kieffer could be greatly relieved by a more equitable distribution of the fruit in the domestic and foreign market season. It was shipped abroad in considerable numbers, with most encouraging results, for the first time in 1901. The Kieffer has not been successfully held in many storage houses. It sometimes discolors on the outside before it softens. At other times it decays at the core while still firm outside, while a further difficulty has been its rapid discoloration and deterioration on withdrawal. In fact so great have been the difficulties in the past that some storage houses refused to accept Kieffer in 1901.

General Conclusions.—The following general conclusions may be drawn from the behavior of the pears in all lots stored in cold storage, up to date, February 10 :

1. A temperature of 32 prolonged the durability of the fruit in storage beyond a temperature of 36.

2. A wrapper prolonged the durability of the fruit in storage.

3. The Kieffers that were ripened in cold storage were apparently as good as the same fruit ripened in the ordinary manner.

4. The Kieffers that were taken out from a temperature of 32, if firm when withdrawn, kept in a temperature of 50 to 60 for two or three weeks without discoloration or loss of quality. From a temperature of 36 they did not keep more than ten days.

5. Discoloration at the core was due to delay in the storage of the fruit after it is picked, except that undeveloped Kieffers may be stored after ripening without subsequent discoloration. Wormy Kieffers discolor at the core in any treatment.

6. Discoloration of the skin was due to bad handling, i. e., rough picking, packing, or any other factor that causes bruising.

Kieffers in Storage.—It will be seen from observations which we have make that the principal troubles with the Kieffers in storage were due, primarily to their treatment before they reached the storage compartment. Our experiments indicate that the fruit should be picked when green, hard, graded well, stored immediately after picking, in a temperature not above 32 (and possibly as low as 31), and no serious difficulty may be expected from such treatment. Fruit growers should realize that the successful storing of the Kieffer depends as much upon them as upon the conditions in the storage house. Refrigeration will not make first quality fruit of seconds, nor

can it correct the evils of bad orchard handling. Successful refrigeration is possible only when both storage men and fruit growers understand the underlying principles of refrigeration and co-operate intelligently.

The Apple is the most important fruit that is stored in refrigeration, in fact it is stored in greater quantities than all other fruits combined. The following statement of the National Apple Shippers' Association, taken from a recent number of COLD STORAGE, gives a conception of the magnitude of the industry.

APPLES IN STORAGE ON DECEMBER 1.

	Barrels in Cold Storage	Barrels in Common Storage
1898	891,000	400,000
1899	1,518,750	634,000
1900	1,226,900	794,000
1901	1,771,200	138,000

1. The apples used in the experiments appear to keep best when picked just before they mature, i. e., when very firm and only fairly colored.

2. The fruit that was stored immediately after picking is keeping better than that in which there was delay before the fruit was placed in storage.

3. The fruit is keeping better in a temperature of 31 to 32 than in a temperature or 34 to 36.

4. The wrapped fruit is keeping better than the unwrapped fruit. It shows less shrinkage.

6. A temperature of 31 to 32 appears to retard the scald. The York Imperials in this temperature shows about 3 per cent., while in a temperature of 34 to 36 there is about 17 per cent. The Rhode Island Greenings show about 5 per cent., in the higher temperature.

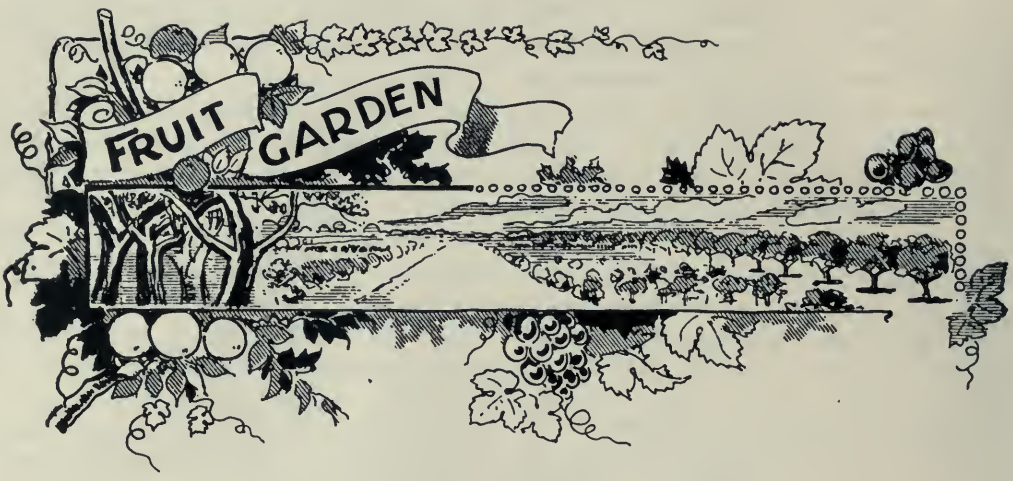
CURRANTS AS ORCHARD FILLERS

AN EASY CROP TO RAISE

CURRANTS are about the cheapest and easiest crop of fruit to produce, requiring very little time and labor as compared with many others, states American Gardening. For fillers, or what might be termed a catch crop, they are indispensable when grown between plum, pear, peach, cherry and quince trees. They can be grown in an orchard of any of these fruits without retarding or injuring the trees. When currants are fruited in this way it is merely a question of more manure or fertilizer. Every intelligent fruit grower will understand this at once. Under this system of intensive gardening you have a nice income from your currants, while your fruit trees are developing and getting ready for fruiting.

It depends entirely upon yourself as to how long these bushes will bear large, marketable fruit.

Remove the New Wood.—No matter how great a sacrifice it may seem, you should remove two-thirds of the new wood each season. Failing to do this you will soon have a lot of overgrown bushes on your hands, and the fruit will dwindle in size and be imperfect in many ways. On the other hand, if you prune judiciously, spray as often as it is necessary, manure well and cultivate thoroughly, you can keep your plantation of currants in perfect order for at least ten years, and one year with another, you will be well recompensed for your investment and labor.



LESSON ON LEAVES

BY

PROF. H. L. HUTT, B. S. A.

O. A. C., GUELPH, ONT.

TREES and shrubs may be divided into two classes, depending upon whether they retain or annually shed their leaves. Those which retain their leaves are evergreens, while those which shed their leaves are deciduous. In this country our commonest evergreens are the pines, spruces, cedars, etc., while all of our fruit trees are deciduous. In warmer climes, where the tropical fruits are grown, even the fruit trees, such as orange and lemon, are evergreens.

Leaves afford an interesting subject for study, not only because of their great variety, but because of their wonderful modifications of form to suit varied conditions. This part of the subject, however, we must leave the reader to study for himself. At present, we shall deal more particularly with a few of the most important functions which the leaves perform in the economy of plant growth.

THE STRUCTURE OF A LEAF

A leaf is usually made up of two principal parts, the broad expanded part called the **blade;** and the stalk which supports it, known as the **leaf-stalk** or **petiole.** The blade is one of Nature's adaptations for the purpose of exposing as much surface as possible to the action of sunlight, for although a leaf may be small in itself, the area exposed by the foliage of a large apple tree in full leaf may amount to several acres.

The petiole or leaf-stalk, is not always an essential part of the leaf, for in some cases it is absent, as in the Honeysuckle, in which the blade rests directly upon the branch.

If, for instance, we examine a maple leaf, it will be seen that the petiole divides at its upper end into a number of parts, and these divide again and again into smaller parts forming what are usually spoken of as the nerves or veins of the leaf. With the petiole, they make up the skeleton or framework

of the leaf, and are composed of woody fibre with a central pith similar to the woody parts of the stem and branches. They are in fact the farthest extensions of the branching of the tree, and convey the sap to the remotest parts of the leaf where it can be spread out and exposed to sunlight.

The spaces between the veins are made up of a soft, cellular substance, filled with minute chlorophyll granules which give to the leaf its green coloring matter. The whole structure is covered above and below with a thin transparent skin or epidermis, through which may be seen, when the leaf is placed under a microscope, numerous small openings called the stomata. Each stoma is an automatic valve by means of which the leaf performs its most important functions.

THE FUNCTIONS OF LEAVES

A careful study of all of the functions performed by the leaves and the chemical changes which take place in them would lead us farther afield than we have time at present to go. Those which are more directly dependent upon the care and management of the tree, it is important, however for us to consider.

THE TRANSPIRATION OF MOISTURE

The soil water which is taken up by the roots is to a great extent merely a carrying agent, and the greater portion of has to be gotten rid of after it has brought the plant food from the soil to the leaves. This giving off of the water takes place through the stomata. It is this transpiration of water from the leaves which causes plants to wilt, when in a very hot sun or dry atmosphere, the direct cause of the wilting being that the leaves are giving off the moisture faster than the roots can take it up.

The stomata open and close according to the conditions surrounding them. In hot, dry weather, particularly when it is windy, they are inclined to open and give off water very rapidly. Hence it is important during such seasons to have the soil, in which the plant is growing, well cultivated so that it may retain plenty of moisture where the roots can get at it.

As the roots absorb water and the leaves give it off, there must be an equilibrium between the roots and the leaves of the plant, if it is to maintain growth. Hence when trees are taken up and transplanted and the greater part of the root-system is destroyed, it is usually necessary to cut back the top to correspond with the roots left.

THE LEAVES ACT AS LUNGS

The leaves are often spoken of as the plant. They inhale carbonic acid gas and exhale oxygen, just the reverse of what takes place in the breathing of animals. In this respect, animal and plant life are complimentary one to the other. As it is important for the health of animals that they have vigorous, strong lungs, so it is important for the growth of the plant that it has vigorous, healthy foliage. For this reason, it often becomes necessary to spray the foliage of trees, even when not bearing, where they are subject to the attacks of fungus diseases which develop in the foliage; for without healthy foliage, the tree will not make satisfactory growth.

Another important function of the leaves is to assimilate or make use of the plant food taken in from the soil and air. In this respect the leaves might also be called the digestive organs of the plant. The carbonic acid gas taken in by the leaves is combined with the sugar of the sap forming starch. This formation of starch is brough about in the chlorophyll granules by the action of sunlight. If the leaves do not get sufficient light, or if the foliage has been half eaten by insects, the plant will be starved to that extent.

CRITICISM ON THE ONTARIO SPY

OUR BEST FANCY WINTER APPLE— HOW TO HANDLE FOR EXPORT

MR. P. J. Carey, fruit inspector, writing in the Sun, says:—In our talk at orchard Institute meetings I was sorry to have to discourage the planting of Spys and Kings, the Spy, because it is so long in coming into bearing and the King, because it is a shy bearer. The chief objection to the Spy can, however be overcome in a measure by top grafting ; but even when it is produced, it is not the most profitable for our export trade. Shippers have in fact, received more black eyes from the Spy than from any other variety, this being due to the fact that the apple is not suited to the rough usage it receives during transport on shipboard. "Yes." agreed Mr. Carey, in reply to a question, "the Spy is perhaps the most popular apple in the American market, but then the duty which stands in the way renders it practically impossible to ship any apples to the big cities of the United States ".

But, while the Spy is not suited for shipment to England and is shut out of the American market, there is still, the Sun believes, a possibility that it will ere long prove the most profitable variety in Ontario, because, as Mr. Carey said, we shall ultimately find in our own country a market for first-class apples, quite as large as that now found in Great Britain. The development of the North West promises to go on at a rate of which at present we have no conception. If anything like 200,000 people go in there this year that will mark the beginning of an inrush for which we shall have to go back for a parallel, to the tide which spread over the American prairies half a century ago, and with this increased population in our North West will came an increasing demand for Ontario apples, and among these apples none better than the Spy. There is too, as Mr. Carey added, a large home market here in Ontario for the produce of Ontario apple orchards, but the cold storage facilities must be more fully developed in order to admit of the holding of fruit in good condition for the late winter market, before this opening can be utilized to the greatest advantage. In this respect the Georgian Bay fruit growers are setting an example to the rest of the Province, in preparing to develop cold storage facilities on the co-operative plan.

As ordinarily handled the Northern Spy, no doubt, has justly earned the criticisms of our friend Mr. Carey ; it is we grant a great many years in coming into bearing as we have proved in an orchard now twenty years planted, which has only yielded two or three good crops; but, now that that period is passed, we are convinced that it was worth waiting for, since it is yielding annual crops of magnificent fruit ; it is, we also grant, a difficult apple to export in perfect condition because of its tender skin, and while this may be an objection on the part of the careless fruit grower, who handles his fruit roughly and packs carelessly, it is one of the very incentives to its planting on the part of the enterprising fruit grower.

That the Spy is the finest general purpose winter apple in Ontario, both in beauty of appearance, and quality of flesh, is acknowledged by all who know it ; and it is most unfair to condemn its planting in these days when we are aiming at building up a reputation in the foreign markets for our best apples. The Baldwin and the Ben Davis may do for the careless shipper, but he who would build an enduring reputation for quality and beauty can succeed with the Spy better than any other apple grown in our province.

How to Handle Fancy Spys.—The writer speaks from personal experience, and not from "hearsay". In a sixty acre apple

orchard in full bearing, from which he is annually exporting to Great Britain and Germany in car lots, he has ten acres of Spy apples now in full bearing. These are harvested later than such apples as Baldwins and Greenings, and not until they have on their richest coloring and when their flesh is at its best stage of crisp, juicy texture. The smaller sizes, and the No. 2 grade are barreled in the orchard from the packing table but all the A No. 1 grade are sent into the fruit house and graded into uniform sizes, the smallest grade being 2½ inch and the largest 3 inch, those below or above these sizes not being considered up to the grade.

This delicate variety is handled with the greatest care, wrapped in tissue paper, and packed in boxes weighing when filled, from forty to fifty pounds each. A padding of fine excelsior is laid in the bottom and top and also between the layers of frnit, thus entirely preventing the least marking of the fruit by the pressing, or by handling upon the journey. Packed in this way the Spy may be kept in cold storage, or shipped around the world, and come out in perfect condition. In proof of this the writer has only to mention the magnificent Ontario Spys shown at Glasgow in the summer of 1901, which he had packed in cases as above described, in the fall of 1900. These were kept in cold storage until needed, and brought on the tables as required, and attracted so much attention that Mr. Robert Hamilton, who was one of the Canadians in charge, reported that he could have sold ten thousand bushel cases in the month of July at $3.50 a case!!

Where the Canadian Spy is known in Great Britain, no other apple is wanted for a fancy trade. For three successive years, the writer has had a special enquiry for this apple from a dealer in Leeds: and one season finding the crop short, he asked to be allowed to substitute Kings and selected Baldwins in place of Spys, but would not consent, because, said he, I have built up my reputation on this apple, and I want no other for my special trade.

*IRRIGATION OF APPLES AND PEARS

A HAND book for the proper application of water has just been published by the Orange Judd Co. It is written by Lucius M. Wilcox, and this revised and enlarged edition seems to bring the whole matter quite up to date. In looking over the book we have made a selection which is just now of practical interest to fruit growers, being a portion of the chapter on Irrigation for the Orchard.

Apples.—This king of fruits may be irrigated in many ways, and a liberal quantity of water is advisable. We have noticed one thing about growing apples under irrigation. By giving them plenty of water when they are attaining full size, or are nearly full grown, they receive more sap and attain fully one-eighth more weight, or specific gravity, compared with similar fruit of the same size. The color of the apple is also greatly improved in this way, and it puts on a polish that could not be attained without irrigation. The characteristic of polishing nicely is noticed principally in the Ben Davis and Jonathan varieties. If the early spring season has been dry the orchard should be irrigated just as soon as the canals are

*Irrigation Farming: a guide book for the proper application of water in the production of crops.

carrying water. If no other circumstances arise it may be deemed advisable to irrigate again every month until the last of August, when water should be discontinued from all fruits. Young trees will take more water than older ones, and a wetting at the time the fruit buds are appearing is quite essential. Give no water at the time of blossoming. After the fruit is half grown it can be forced to greater size by copious irrigation. The apple attains one-tenth of its final size during the last month of maturity. Russian varieties have thick, leathery foliage which cannot readily transpire, and for this reason but very little water should be given them at any time.

Of course it must be understood that the management of an orchard in the fall must depend largely on the dryness of the season, the age and fruitage of the trees, as well as their variety and general condition. While young trees not yet in bearing, or those not carrying a load of fruit, may need no water after the 15th of August, it may be quite essential to give waterings to trees heavy in fruition to more thoroughly develop the fruit itself and aid in the picking. It has often been observed at harvest time that the apples do not come off easily and do not feel right in the hand. Under these circumstances to postpone the picking and irrigate the orchard may require four or five days' time. In twelve hours there will be a noticeable difference; in thirty-six hours the apples will gain in color, plumpness and size. When picking is resumed the apples will come off nicely and be larger and more highly colored. The gain may be at least ten per cent. The last irrigation effects cherries, plums, and grapes as much or more than apples, and we always irrigate heavily while they are ripening. The keeping qualities are also better.

Pears.—This valuable fruit will succeed in most kinds of soil, but flourishes best in rich loamy, or heavy red clayish, or sandy soils The latter is especially adapted to it if it carries the oxide of iron, an element quite common in many of the mountain districts of the far west. The best kinds to plant for permanent orchard are standard sorts budded on pear stock, which, if well cared for, should stand for two hundred years. The planting should be sixteen or twenty feet apart. Dwarf pears are best budded on the quince, although this practice forces their blooming period and places them in more imminent danger of spring frosts. Generally speaking the same amount of water is required as for the apple and plum, and the same general rules, particularly as to cultivation, should be followed. The fruit should never be allowed to become thoroughly ripe on the trees.

Mr. R. Cullis, Secretary West Durham Farmers' Institute, writes us of a successful orchard demonstration meeting held on 8th inst. at Camborne, in the orchard of Mr. Wm. Parsons. Messrs. E. Lick, of Oshawa, and T. J. Carey, of Cobourg, Dominion Fruit Inspectors, were the speakers. As a result of the meeting a local Fruit Growers' Association was organized, to be known as the Township of Hamilton Local Fruit Growers' Association. The following officers were elected: *Pres.*—Mr. Thos. Davidson, Camborne; *Vice-Pres.*—Wm. S. Case, Cobourg; *Sec.-Treas.*—R. Cullis, Camborne. Nearly every one present joined the Association. An adjourned meeting of the Society will be held in Cobourg on June 10th at 2.30 p. m.

SEASONABLE NOTES FOR JULY

BY

WM. HUNT

O. A. C., GUELPH, ONT.

FLOWER GARDEN.—Constant surface stirring of the soil in flower beds or borders will not only destroy weed crops, but will also materially help the growth of all kinds of bedding plants. Deep stirring of the soil is not necessary, if the ground was properly prepared before planting. A very small three or four-toothed rake, or a light scuffle hoe are the best tools for this work, which should be done when the soil is fairly dry and before it has had time to crust over very hard on the surface.

Staking and Tying.—These operations are often left until the plants are badly damaged by wind or rain storms, or perhaps entirely ruined by not being attended to earlier. It it always a good plan to have stakes for such plants as dahlias, ricinus, etc., driven in near the plants requiring support. Many a fine plant has come to grief because a stake could not be found handily just when the plant needed tying. In the matter of tying up plants always endeavor to stake and tie plants so that they are as natural looking as possible after the operation is performed. Avoid the close bunching process of tying that makes the plants look more like bundles of stems and foliage, than growing plants. Another point deserving attention when tying plants is to endeavor to place the stakes in such a position that they will be hidden from view as much as possible by the foliage. Use soft twine for tying purposes, so as to prevent as much as possible damage from friction, and use neat sizeable stakes.

Decayed Flowers.—These should be kept picked off regularly, unless required to remain on the plants to help produce seed. Decayed blossoms are not only unsightly, but also exhaust uselessly the vitality of the plant. In this respect do not forget that daily picking of sweet-pea blossoms, and not allowing them to go to seed, not only improves the size and depth of color of later

FIG. 2352. FREESIA.

blossoms, but also helps materially to extend the flowering period of the plants.

The Greenhouse.—If ferns and exotic plants occupy the greenhouse during the summer months, the glass must be heavily shaded. These plants will require plenty of water at the roots and a moist atmosphere maintained by daily syringing, as well as heavy sprinklings of water on the floor when the ventilators are closed. Where choice ferns and exotic plants are growing the ventilators should be closed an hour or two before the sun ceases to shine on the greenhouse.

Roses and Chrysanthemums.—If roses and chrysanthemums occupy the greenhouse, much more ventilation is necessary, and far less shading required than for ferns, etc. In fact the shading for both roses and chrysanthemums should be very light, as close shading induces a weak spindled growth that is not conducive to good flowering results. Roses and chrysanthemums should have liberal supplies of water at the roots and daily syringing on bright days. Pick every bud off the roses as soon as the bud is formed, so that the whole strength of the plant can be used to produce a good stocky growth of wood.

Freesias.—These useful winter flowering bulbs should now be kept quite dry and dormant, until they are potted on. They can be left in the soil they were grown in, and the pots stood away in a dry cool shed, or the bulbs can be picked out from the soil and put in a pot or box with sufficient dry sand or earth thrown over them to keep them from getting too dry and shrivelled. In either case keep the bulbs quite dry, and in a cool place. A shelf in a shed is a good place for them. August and September are the best months for starting freesias into growth.

THE WINDOW GARDEN

Window-boxes form the most prominent feature for window decoration during the summer months. It is oftentimes a difficult matter to secure flowering plants that are suited for shaded positions on the north side of the house. Foliage plants and ferns can be easily selected for these positions, flowering plants in variety are not so easily ob-

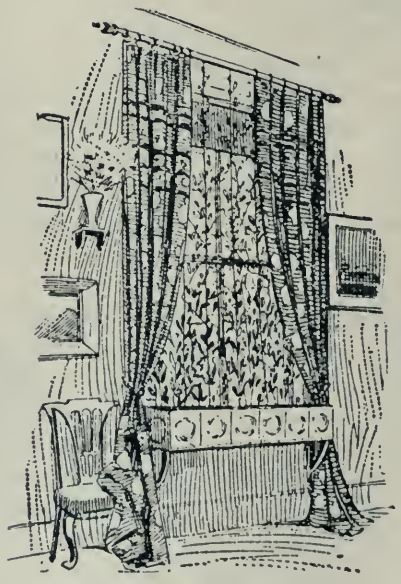


FIG. 2353. WINDOW GARDEN.

FIG. 2354. BEGONIA, WELTONIENSIS ALBA.

tained. Many varieties of summer flowering begonias can be had however that will give splendid results in windows or on verandahs where the sun shines for perhaps only an hour or two, morning and evening. Amongst the most effective and easily grown kinds is the pink flowering Weltoniensis begonia, also the white flowering variety Weltoniensis alba (Fig. 2354), the former being the most robust and easiest to grow of the two kinds. Being of a semi-tuberous nature both of them can be kept partially dormant during the winter, but must not be dried off completely in the same way that the tuberous varieties are.

Another good variety for summer flowering is the dwarf growing, white flowering begonia Bruant (Fig. 2355). This pretty little begonia can be easily kept during the winter, its bright glossy green foliage being most acceptable even when not brightened up with its ivory white blossoms. It must not be given as much water however during the winter as when it is in active growth in summer time, The Begonias mentioned as bedding varieties in last month's journal are also good varieties for culture in windows, either as pot plants or in window boxes. These Begonias will be found to be quite an acquisition to the comparatively limited list of flowering plants suited for window boxes in shaded positions.

Geraniums for Winter.—This is a good time to commence preparing a stock of these ever popular and useful plants for winter flowering in the window.

It is quite possible that many readers of this journal have a favorite geranium plant that has become gaunt and unshapely in growth, similar to the one shown in the accompanying cut (Fig. 2356). Instead of planting it out in the border, as is often done to try and make a shapely plant of it before autumn, it would be far better to treat it as shown in Fig. 2357 by giving it a severe cutting back. If the growth of the plant is very soft and sappy the cutting back process should be deferred until the plant has been stood outside in the pot in a sunny position for the wood to harden a little. It can then be pruned back as shown in the cut, by pruning the growth back to within

FIG. 2355. BEGONIA, BRUANT.

FIG. 2356.
GERANIUM BEFORE BEING CUT BACK.

a few joints of the hard growth of the stem. After the pruning back, the plant should be put in a partially shaded position near a building or fence. Very little water should be given it until it shows signs of growth but the soil should never become really dust dry. As soon as growth commences, shake the plant out of the earth and repot it into a size smaller pot in rather sandy soil. Plunge the pot up to the rim in sand or coal ashes, and water well once, after that water only when the soil shows signs of dryness. In about five or six weeks the plant will require a larger pot, probably two sizes larger than what it was potted back into before. When it has become established in this size pot it will probably be time to take it into the window where it should give good flowering results. Old geranium plants give good results if treated in this way, much better oftentimes than young plants taken from cuttings. The cuttings however taken from the plant when cut back should be placed in sand, either in a pot or shallow box. These will also make nice little plants by autumn for the window. The tips of the shoots should be taken for the cuttings, five or six inches being a good length for the cutting. By treating overgrown, gaunt specimens of geraniums in the way I have attempted to describe, many plants that gave good flowering results last winter can be had in even better shape and condition than during last season. It is useless and unnatural to expect even the all-enduring geranium to flower and grow continuously the whole year round. This pruning back and partial resting process, as described, gives a good shapely plant as well as allowing it a partial rest which all plants require in a greater or lesser degree to be successful.

FIG. 2357.
GERANIUM AFTER BEING CUT BACK.

THE KNACK OF BOUQUET MAKING

HINTS AS TO HARMONY OF COLOR, ARRANGEMENT, ETC.

BY

EBEN E. REXFORD

PERSONS who are not particularly successful at bouquet-making generally assert that there is a "knack" about it which not everybody can hope to discover. I admit that some persons seem to have born with them the knowledge of just what kinds of flowers to use, just how many and just how to put them together. They do not have to learn these things. But that does not prove that there is really any "knack" about the matter. It only goes to show that some persons naturally have good taste—an intuitive taste, we may call it—while others must cultivate taste, or acquire it, in order to do successful work at bouquet-making. Most persons who have a good eye for color and a sense of harmonious proportion may become able, by a little practice, to do creditable work along this line.

The first thing to do is to learn what colors go well together, and the only way to learn this is by experience. You may read about "complementary colors" and all that, but to know all about them you must see them together. There must be an object lesson, in order to get the idea firmly fixed in your mind by the effect harmonious colors have on the eye. Therefore, try all colors together and find out which you can safely use in combination. These experiments will soon convince you that the line can not be drawn at positive colors. Intermediate shades and modifications of the primary colors must receive quite as much consideration as the primary colors themselves.

Then the principle of contrast must be taken into consideration. There are contrasts and contrasts, and not all contrasts are harmonious ones, you will find. Scarlet and yellow afford striking contrast, but not always a harmonious one. Blue and orange are not discordant, and their contrast is very decided, but it is not a pleasant combination by any means, except in rare instances where strong, high colors are depended upon to produce certain results which we would not care for under ordinary conditions. In bouquet-making we find that the most satisfactory contrasts are those by which the use of a subordinate color heightens the effect of the predominating color. We may often secure this result by using two shades of the same color.

One color or shade must be subordinate to the other in importance. They can not have equal value in the combination without detracting from or entirely spoiling the effect aimed at. Suppose, for illustration of the idea, we have some maroon and white dahlias to arrange. If we have just as many of one color as of the other, our bouquet will not please us. But if we have but two or three white flowers among a dozen dark ones, the effect is pleasing, because the contrast afforded by the small amount of white used emphasizes the darker color work effectively. We see beauties in it that we would not see if there was no contrast. Reverse the positions and let white predominate. The few dark flowers used make the purity and loveliness of the white

ones stand out prominently, as it would not if there was nothing to afford contrast. By these contrasts we secure a sort of background, dark or light, as the case may be, against which to display the predominating color and bring out the full beauty of it. In every arrangement of flowers there should be some such contrast. Sometimes the foliage of the flowers used will supply all that is needed, but generally the flowers themselves should supply it.

As a general thing, we use a great many more flowers than there is any need of in our floral arrangements. We forget or overlook, if we have learned the fact, that strength is not so much in quantity as in quality. An excess of quantity may produce a weak result. The artist, who paints a picture of flowers which you would be glad to hang upon the wall of your parlor, does not crowd his canvas with color. He depends upon the effective distribution of it and the use of contrast to bring out the decorative idea fully. I have seen pictures which seemed one great glow of color, and the careless observer would naturally conclude that the luminous effect was secured by the mass of color used. But analyze the picture and you discovered that the result was secured by a really small amount of color. A few roses scattered considerably against a background of green foliage will give the effect of a great wealth of color, because all the artistic possibilities have been realized by the combination. Try combinations by which this principle is illustrated and you will be surprised to see what strong and satisfactory effects are secured by the use of a small amount of material. You will learn from it how to "make a little go a long way."

And bear in mind the fact that most flowers are most effective when kept by themselves. There may be harmony in color without harmony in habit. There are very few flowers which do not suffer by being massed with others.

—*Home and Flowers.*

ATTRACTIVE CACTI-IV

GRAFTING THE CACTUS—HOW IT IS DONE—FANTASTIC FORMS

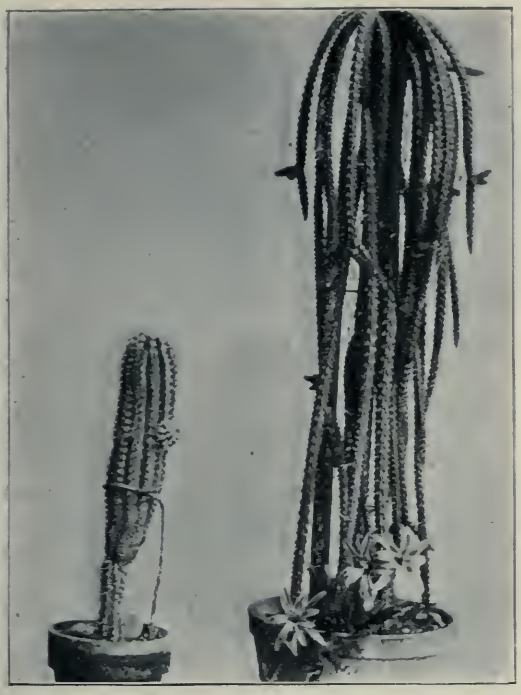
BY

J. H. CALLANDER

WOODSTOCK, ONT.

SOME of the Cacti, which make most desirable specimens when of good size, are so very slow in growth on their own roots that a collector would get tired waiting for them. This is one of the principal reasons for grafting cacti, although it is also done for other reasons. Better effects are obtained by having a trailing or drooping part grafted on a tall stout stem of cereus, as thus, a specimen can be set on a table without having to hang over the sides. Then other curious effects are obtained by putting a globular part on a cereus stock, when, in a very short time the scion is full grown, and blooming freely. To improve the bloom and get it sooner is another object in grafting.

The process is not at all hard, and any one who has some good strong rooted cut-



a *b*

FIG. 2358.

LACE CACTUS (*a*) AND RAT TAIL CACTUS (*b*)
Both grafted on Cereus Colubrinus.

tings of cereus nycticalus, grandiflorus, or colubrinus, and has some slow grower like the epiphyllums, cristates, or the globular sorts, can do as well at producing these curiosities as an old hand at the business. First, be sure that both the scion and stock are in a good healthy, growing condition, preferably in the spring. For instance, if it is desired to use a stock of C. colubrinus, and put a top on it of C. flagelliformis or rat-tail cactus, select a stock about two feet high, and take two nice pieces of new growth of the rat-tail, about three inches in length. Cut the top square off the stock and split it down the centre about an inch. Then, with a sharp knife cut the scions to a wedge shape, and insert in the split top of the stock. To hold them in place you only require to run a long cactus spine through both stock and scion, and tie a string firmly around the stock to keep the cut edges together. For a few days set in a partially shady place, and do not wet the graft when watering. Growth will very quickly commence, and you will be surprised at how fast a large head will form on the tall stock. The illustration shows what can be done with this combination in only two years. The large head, which was in bloom at the time the photo was taken, nearly all grew in one season.

The crab cactus is grafted in the same way, but the best stock to use is the pereskia, which forces a fast growth, and is better when old than a cereus stock. The globular sorts can be put on in any way that seems to suit best, either set flat on top of the stock, care being taken to have the cut edges about the same size, or by wedging either the stock or scion, and inserting into the other, always fastening the two together as firmly as possible with spines, and by tying string around to hold the edges together till they unite.

The small specimen shown in the engraving is only one season's growth of echinocereus coespitosus or lace cactus on C. colubrinus. The scion, when put on, was only about the size of a walnut, but grew so fast it looked as though the skin must burst. A specimen of C. flagelliformis cristata or opuntia tesselata cristata, makes a very odd plant when grafted, and assumes all sorts of fantastic forms in coxcomb style.

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

ORCHARD MEETING NOTES

BY THE SECRETARY

WE had a call last week from Mr. McNeill and Mr. Carey on their return from their series of orchard meetings. They report excellent meetings, and in spite of the pressure of work at this busy season from thirty to one hundred eager fruit growers attended each meeting. "The most pleasing feature of these meetings," said Mr. McNeill, "was the intelligent interest taken in the discussions back and forward of each disease, defect and insect that might be found in passing through the orchard. There the principles of orchard cultivation would be taken up and specific instructions given in the practice of pruning. This kind of instruction has double the value of that given at indoor meetings in that one cannot only hear but actually see the things done."

Mr. Carey took up the apple question from the packer's and shipper's standpoint, explaining how the fruit could best be handled from the time it was taken from the tree until it was packed and labelled or left the grower's farm. He pointed out that the salableness of fruit is effected by being picked too early or too late in the season. It is better, said Mr. Carey, to harvest the fruit in two or at most three weeks while it is in the pink of condition, than to have the picking

season extended from the first of September until the last of November and get too green and over ripe fruit. One should study his land and locality and then get the right varieties. We want a large vigorous productive tree, an apple of a red color, and one that on being bruised will dry instead of rot. A shipping apple of this kind will rarely be classed as "slack" and will give a minium amount of waste in packing. On being asked what variety he would recommend as having those characteristics, Mr. Carey said "From twelve years experience as a shipper, I like the Phoenix, they handle well; as a packer, I always liked to get into a Phoenix orchard."

Secretary Mitchell, of the Port Elgin branch of the Lake Huron Fruit Growers' Association, reports lively interest in the orchard meetings in his section and sends a list of new memberships.

W. W. Hilborn of the Essex Experiment Station, writes: I believe these orchard meetings do much good to help farmers to adopt more careful methods of orchard treatment. In travelling over the country, one sees much need of this, for neglected orchards are everywhere apparent. Many orchards get no trimming but the browsing of the cows, and it is little reason therefore, that the trees are dying out and the investment becoming an unprofitable one. The time has come when to grow apples successfully, we must give proper cultivation, and annual pruning, and spraying. There is no other line of fruit growing today that requires so much attention as the apple, and few crops that can be more easily injured by improper methods of cultivation. Just in this connection one sees the value of such instruction as that given in orchards now by Mr. McNeill. If we had more men doing work like Mr. McNeill, I think apple culture would receive more attention. I believe the future for apple culture in Canada is brighter than for any other fruit we grow, if we can induce the growers to give as much thought to their apple orchards as they do to other farm crops.

Trenton.—Mr. Walter Dempsey, Director of the O. F. G. A. for District (4) reports a good meeting in Mr. Frazer's orchard on the 12th ult. Mr. Lick was present and gave a very interesting talk on spraying which lead to a good discussion. Mr. Lick answered questions and spoke briefly on cultivation, thinning fruit, cover crops, etc. There were twenty-one fruit growers present, coming about twelve miles each way from Trenton. All took part in the discussions.

NOTES FROM OUR SECRETARIES

COLLATED BY THE SECRETARY

Mr. Frank Metcalf, Secretary of the Lake Huron Fruit Growers' Association reports that their association is attracting considerable attention among the farmers. On Monday, May 12th, an orchard demonstration meeting was held in the orchard of Mr. A. W. Sloan. Mr. Alex. McNeil, of Walkerville, Dominion Fruit Inspector, and Mr. A. E. Sherrington, of the Experimental Fruit Station at Walkerton, gave practical demonstration in spraying and in talks on general orchard management.

We had a call at our office this week from Mr. Elmer Lick, after finishing his series of

orchard meetings in the Lake Ontario, Bay of Quinte and St. Lawrence valley regions. Mr. Lick reports good meetings. In some cases in spite of very inclement weather for orchard demonstration work, and at this very busy season of the year when large crowds are not to be expected, the attendance at many of the meetings was a surprise to the speakers. Farmers seem very anxious for this definite, practical sort of information. They want information on the actual work and practice of fruit growing, by men who have made a success right in this line of business. Farmers are beginning to realize that the orchard is worthy of care and attention, that proper spraying and pruning will ensure a good quality of fruit, and that manuring and cultivation of the orchard will pay a profit the same as for other crops. In short, farmers all over the province are becoming alive to the possibilities of apple growing.

In nearly every district local Fruit Growers' Associations are being formed. At Camborne Mr. Lick was able to assist in the organization of a branch known as the Hamilton Township Association. The officers are, Thos. Davidson, president; Stephen Kerr, vice-president, and R. Cullis, secretary-treasurer. This is likely to be a live organization, and to be useful in advancing the fruit interests of this part of the country.

At Belleville, Mr. Lick reports an especially good meeting. It was held in the orchard of Mr. J. K. McCarger. A very lively interest was evinced, and many questions were asked and answered. Here, too, a branch organization was formed, with J. K. McCarger as president, J. R. Anderson, vice-president, and Francis S. Wallbridge, secretary-treasurer.

At Maitland the meeting was very encouraging, "due largely," Mr. Lick remarked, "to the earnest and able assistance of Mr. Harold Jones. Mr. Jones has a large and constantly increasing apple orchard, which is an object lesson that makes the best educator along the lines of apple growing that can be given in any neighborhood."

Word comes from Mr. A. E. Sherrington, of the Walkerton Fruit Experiment Station, of good meetings in the Georgian Bay District. At Port Elgin and Teeswater there was great interest shown in the work. At the latter place a branch association was formed, with a paid membership of twenty-four. Mr. Sherrington writes: "These object lessons in the orchard are just what the people want. As the counties of Bruce and Huron are large, in order to reach all our people, we are going to organize branch associations in every locality. I am calling a meeting in Lucknow on June 11th, and am asking each branch association to send two delegates in order that we may organize the District Association, and arrange our work for the future. I am advising every grower to grade and pack his own fruit, and that we may have a uniform brand on our fruit I am suggesting that we adopt the following:

Lake Huron Fruit Growers' Association.
Grown and Packed by.....
Variety .....

"At the present time we nearly all have no system of grading and packing, and this does not inspire confidence among the growers, packers, shippers and consumers."

We also have the following letter from Mr. Sherrington—"I attended a meeting of the Teeswater branch of the Fruit Growers' Association yesterday, and we had a grand meeting, nearly all the members being present. Some that were not members became so before leaving, and every one was much interested in the work. After organizing them I addressed the meeting on 'Orchard Cultivation.' There is a marked improvement in the orchards throughout the coun-

try this season. I think fully one third of the orchards are now being cultivated. Enclosed you will find a list of officers and members of the Teeswater Branch."

The Walnut Grove planted at Walkerton by Mr. Shaw was visited by Mr. T. H. Race of Mitchel and the writer, on the occasion of a recent meeting of the Walkerton Horticultural Society. The grove is now about twenty years planted ; trees are beautiful in form, the trunks are straight and clear of limbs about twenty feet high ; and at the base they would measure from 8 to 10 inches in diameter. Mr. Race was interested to know the object in planting such a large grove of walnut trees. "Was it for the lumber," he said "which twenty five or thirty years ago was worth $75 a thousand ; or for nuts which would surely sell at a good price in the large cities, or was it purely for ornament?"

Mr. Sherrington on who also accompanied us thought that little had been done with them for any purpose. The double row had robbed the ground of its fertility for a width of at least thirty feet from the fence, and the ill effects were noticeable upon the apple trees nearest them.

To settle the questions satifactorily we appealed to Mr. Shaw himself for some definite information.

"*How long have these trees been planted*"? we inquired.

"The two rows of walnut trees" said Mr. Shaw "running north and south along a part of the west side of my grounds grew from nuts planted there in the autumn of 1882, the same time that the apple orchard growing east of them was planted. You would observe a row of maple trees had also been planted west of these two rows, but most of the maples were killed by caterpillars two years since. These caterpillars did not eat the leaves of the walnut trees."

"These trees were planted thus — — — — so that each tree east and west was not opposite each other. There are in the two rows of walnut trees 250 trees, besides you might notice many others in the grounds. The nuts were planted 12 feet apart, 3 or 4 together but only one was left to grow, the others were removed when 2 years old and replanted."

"*What object had you in planting this grove*"?

"My object in planting these three rows of trees one maple and two walnut, was to form a wind break to protect the orchard from the southwest and west in this country. You would likely observe that towards the south, where these rows reach higher and drier ground, they were about ⅓ smaller in diameter than where they grew on low moist land.

"*What use do you make of the nuts.*"

"Nuts have grown on these trees for several years but not in great abundance, no doubt my having the lower limbs removed so as to increase the height of the trees prevented this. Several bushels grew on them last year, some of which I planted and gave the rest to my neighbors to plant, and one gentleman has planted two or three bushels of them. I have made no effort to ascertain the value of the wood of these trees as they now stand. I think these walnut trees are as rapid growers as our hard maples and make as good shade trees, and they are proof against caterpillars."

Georgetown.—A Horticultural Society, with very bright prospects of usefulness, was formed in Georgetown on the 2nd of May, and a good membership secured. The first public meeting will be held this fall.

Question Drawer

Hollyhock Rust.

1296. Sir,—Enclosed herewith I send you a leaf from one of my hollyhocks affected with a blight or rust that is doing my collection much damage. It is fastened so closely to the leaf that it cannot be washed off. Can you tell me how I may rid my plants of this? I hope it is not a recurrence of the pest that caused the growing of this fine flower to be abandoned for a time some years ago.

Mr. Clement's hollyhocks are affected with the Hollyhock Rust, a disease which originated in Chili, but first appeared as a pest in Australia. It entered Europe soon afterwards through France, and is to be found now wherever the hollyhock is cultivated. The peculiar feature of this rust is that only one spore form is known—the teleutospore. This appears on the leaves as pale brown warts. These spores will germinate at once, so the disease is continued throughout the season. It is likely also that the teleutospore form may pass the winter in the resting stage. The common Round-Leaf Mallow is also attacked by the same rust; and, if hollyhocks are to be free from this rust, the wild mallow must be looked after carefully.

There are two methods of treating this rust, 1st, by spraying with Bordeaux mixture two or three times during the growing season; and, 2d, by collecting and burning the fading and falling leaves, and not allowing them to decay on the ground under the plants. It is possible for every hollyhock enthusiast who fears the attack of this rust to use both of these methods, as they are simple and effective.

O. A. C. Guelph. W. Lochhead.

Effect of Cold Storage on Fruit.

1297. Sir,—Does cold storage spoil the quality of fruit? Is ice more natural than chemical cold storage? I found that chemical cold storage changed my Flemish Beauty pears into fruit no better than turnips: they would not ripen when brought out.

Montreal. R. Brodie.

The Flemish Beauty pear does not ripen well if gathered before it is mature. In this respect it differs materially from the Bartlett which will ripen even if immature when harvested. The Flemish Beauty, on the other hand, wilts and becomes leathery and insipid, if gathered too soon. Probably this explains the difficulty with those referred to by Mr. Brodie, and not the cold storage at all.

To Spray or not to Spray.

1298. Sir,—I enclose you the following clipping from a Buffalo paper which seems to be very much opposed to spraying.

"As last year was an off year with the apple crop, it is believed that the yield this year will be a large one. For several years past hundreds of farmers in Niagara and Orleans counties have persistently practised spraying the trees. Now, those who were the most ardent believers in the benefit derived, declare themselves opposed to it, and they say that this year they will take chances and let nature take its course.

Two years ago it was observed when there was such a large crop that the orchards that were not sprayed bore the best fruit and last year the result was the same."

I intended purchasing a machine but such reports as these are very discouraging. I should like to have your opinion.

Southend, Ont. George Slade.

A newspaper report such as this has no weight with us whatever. There is no more sense in it than if one were to give up insuring his house because for several years he had noticed that his neighbor's house, which was not insured, had not been burned. There are seasons when scab, aphis and canker worm, do not trouble us, and in such seasons the unsprayed orchard yields as good fruit as the sprayed one, but nevertheless it pays to be on the safe side.

Snow Ball Leaves Withering.

1299. SIR,—I am sending under separate cover a sample of Snow Ball leaves. The whole tree seems to be withering up and dying. I sprayed it twice with Paris green. Can you give cause and remedy?

Walkerton. JAS. WHITEHEAD.

This beautiful shrub is suffering most severely, in all parts of the country, from a kind of aphis which gathers in great numbers on the under side of the leaves and sucks out the juice, causing them to wither and dry up. We have referred the matter to a specialist, and in the meantime would advise spraying with kerosene emulsion. In spring, when the buds are bursting, a thorough drenching of the whole tree from the ground up to the ends of the limbs with crude petroleum emulsion or with a strong solution of whale oil soap, would probably destroy the young aphidæ, just as they are hatching out.

Open Letters

INDUSTRIAL EXHIBITION, WOLVERHAMPTON, ENG.

CANADIAN APPLES—BRIGHT PROSPECTS—A LETTER FROM THE SUPERINTENDENT

A. McD. ALLAN

ALTHOUGH during an Atlantic voyage there is time which might be profitably expended in the study of horticulture in theory, there is but a limited space for practice! It was, however, interesting to find daily upon the dining tables fine specimens of Baldwin and Spy apples and Drouard pears from the cold storage chamber in the ship. But the few days on ship were spent pleasantly or otherwise according to the condition of each passenger. Some taking exercise at "shuffle board" or "ring toss" on deck, others engaged in trying to walk as if quite at home upon the rocking ocean liner, a few reading and some otherwise engaged possibly in exercise more violent than agreeable! But landing day soon comes and ship's company parts never to meet again in all probability.

A short run from Liverpool brings me to the site of the exhibition at Wolverhampton, a town of about 7,000 inhabitants, situated conveniently for the residents in the Midland counties.

The exhibition is held in part of a beautiful public park, and occupies probably about fifteen acres. The park, like all English parks, is well planted with a great variety of trees and plants, contains a chain of lakes in which are fine specimens of the swan, duck, water hen, etc. The walks, which are numerous and cut out in easy sweeps and curves, are made of a reddish fine gravel which, when rolled, becomes almost as smooth as our cement sidewalks.

The exhibition grounds are a marvel of neatness and cleanliness; buildings are good and well filled with exhibits practical rather than fancy. It is pretty generally acknowledged that the Canadian building is not only possessed of the most attractive exhibits in the grounds, but also the most practical.

Our display of fresh fruit from storage is

confined chiefly to Baldwin, Spy, Ben Davis, King, Phoenix, Seek, Fameuse, Wealthy, Fallawater, Mann, Swazie, Golden Russet, Nonpariel, Grimes, Canada Red, Scot's Red, Stark, Peck's Pleasant, Pewaukee, Spitzenberg and Drouard and Vicar pears. Arrangements had not been completed in time to make a selection from the crop of last year for this exhibition, hence the government had to take these fruits from some packed in Montreal storage, and although they are not by any means such as we would select for this purpose, people generally are delighted and astonished at their excellent appearance, especially when they read the printed notices "Canadian fruit picked in Sept. and Oct., 1901, and kept in cool air." Besides this display we have four handsome octagonal shaped stands covered with many specimens of fruits and vegetables preserved in fluid, and these are admired greatly.

Our system of cold storage leaves little to desire, and it is evident that all specimens that were perfect when packed are still in a good state of preservation, and even the small, spotted and wormy specimens carried well and most of them landed in the same order as when packed. These of course have been discarded as unfit for exhibition and only the best specimens used. The "Wilson" case was used, each specimen being wrapped in tissue covered with light brown paper. Greening, Ribston and Blue Pearmain were quite unfit for the tables, but of the list I name above we have fairly good specimens under all the circumstances. I look forward with interest for a selection from this year's crop of all such as can be used before closing day, and feel sure it will pay to use every care in selecting and forwarding. It is chiefly with such a display that we can dispel the still too prevalent idea the ordinary Britisher has of the coldness of our climate, and this is certainly the only point that stands in the way of a much larger emigration to our shores.

I made several enquiries regarding the effect of our "Marks Act" upon the trade and am pleased to hear that some at all events have remarked an improvement in packing. I have shown the act to many dealers and all express themselves strongly in favor of it, and state openly that if the act is carried into full effect it will do more than anything else to establish confidence between shipper and buyer. It will undoubtedly take time to do this as confidence has been rudely shaken in the past, and only persistence in honest packing can place us where every honest shipper should be. Possibly if boxes instead of barrels were used we could regain confidence more quickly. The Tasmanian apples are all shipped in this way, and, although generally a softer fruit than ours, arrive in prime condition.

I find that harm is done by shippers sending a variety of apple under different names. The retailer here only knows a few kinds, and does not attach much value to any outside of what he knows. It is therefore very important that nomenclature should be studied and that inspectors see most carefully to correctness in this respect so as to accustom the buyers here to find varieties properly classified from all sections of Canada and from all shippers. It is only in this way we can hope to establish a market value for other kinds besides Baldwin, Spy, Greening, King, etc. At present markets here only recognise value in about seven or eight varieties which come forward properly named from all shippers. All others have to take a secondary place or come in with "culls."

If time permits I shall examine all the varieties coming into Britain from Tasmania and give you the results of my humble judgment in another letter.

British Columbia, a Competitor in Winnipeg.

SIR,—I am just in receipt of a letter from Peachland B. C., in which the writer is most enthusiastic over the future of that country. He says that last year the Cold Stream Ranch (Lord Aberdeen's) produced, from one hundred acres, apples which sold for thirteen thousand dollars! I think that Ontario fruit growers should be aroused to a sense of the danger of this western province stealing away from them their best market.

J. J. PHILP,
Fruit Inspector.

Ottawa,

Our Affiliated Societies

Hamilton.—The Spectator flower garden competition has been finally closed, all the entries having been tabulated and arranged in order and the list handed over to the committee of the City Improvement and Horticultural societies. Nearly 100 boys and girls are working in the junior competition and over 50 adults are interested in the contest for grown-up people. The entries are from all parts of the city, and the judges will have a good deal of traveling to do in making their several inspections during the season. These inspections will be unannounced, and it is expected that there will be at least three of them before the end of the season and before the awards are made. In the meantime the contestants are all working to make sure that their gardens are the very best in the whole city and that the first prize is coming their way.

Paris.—The Horticultural Society has interested itself in the improvement of the school grounds, and especially in the planting of a large collection of trees and shrubs, in order that the children may become familiar with the varieties. A gentleman who has travelled much, has expressed great appreciation of the work, and says that no where else has he seen so excellent a collection of varieties planted on school grounds. The society furnished elms, walnuts, basswoods, horse chestnuts, white oaks, hickory, white birch, cut leaf and negundo maples, Colorado blue spruces and tulip trees in sufficient number to surround the large school grounds, and besides this there is a large collection of flowering and ornamental shrubs, spireas, deutzias, weigelias, syringas, hydrangeas, flowering thorns, forsythias, and a variety of native shrubs, which have been planted to give the best effects.

Our Book Table

AMERICAN HORTICULTURAL MANUAL, PART I.—Comprising the leading principles and practices connected with the propagation, culture and improvement of fruits, nuts, ornamental trees, shrubs and plants in the United States and Canada, by Prof. J. L. Budd, of Ames, Iowa. Cloth, $1.50.

The plan of this work seems to be somewhat after that of Downing's Fruits and Fruit Trees of America, except that the part giving cultural methods is published in a separate volume, and the Systematic Descriptions will follow as Part II in the same manner. That many changes and advances have been made in horticulture since Downing's work was published, is evident from the many appendices which are being made to that valuable work, and we welcome this work of Prof. Budd's as an effort to bring up to date the Pomology of North America. With such excellent manuals at hand, no fruit grower needs to be ignorant of either the best varieties to plant, or the best methods of cultivation.

IRRIGATION FARMING, a hand book for the proper application of water in the production of crops, by L. M. Wilcox, editor of "Field and Farm." Revised and enlarged edition. Illustrated 1902.

The chapter on "Irrigation of the Garden" will alone commend the book to market gardeners, and that on "Irrigation of the Orchard" will make it indespensable to the many fruit growers in Ontario who have suffered serious loss of late years from long continued drouths, and consequent small sized fruit. The principal chapters treat very fully of the advantages of irrigation; relations of soils to irrigation; treatment of alkali, water supply; canal construction; reservoirs and ponds; pipes for irrigation purposes; flumes and their structure; duty and measurement of water; methods of applying water; irrigation of field crops, the garden, the orchard, the vineyard and small fruits; all about alfalfa; windmills and pumps; devices, appliances and contrivances; subirrigation and subsoiling; sewage and drainage; irrigation in humid regions; common law of irrigation; glossary of irrigation terms, etc. The volume is profusely, handsomely and practically illustrated.

COMMISSIONER OF HIGH WAYS.—Sixth Annual Report, 1901, by W. A. Campbell.

WESTERN FAIR.—Prize List, London, Canada, September 12th to 20th, 1902.

NOVA SCOTIA.—Annual Report of the Fruit Growers' Association, 1902.

ONTARIO FRUIT EXHIBIT AT PAN AMERICAN, 1901, W. H. Bunting, of St. Catharines, Supt. This report has been published as an appendix to the report of the Ontario Fruit Growers' Association. Mr. Bunting first gives a capital summary of such fruits in connection with the exhibits as are of the most practical importance to our fruit growers; then follows an official list of awards; a list of collective exhibits with dates; and a complete alphabetical list of all varieties of fruits shown.

ONTARIO FRUIT CROP REPORT FOR 1902.

COUNTIES.	APPLES.					PEARS.			
	Summer	Baldwin	Spy	King	Greening	Bartlett	Duchess	Aufore	Other kinds.
ESSEX.									
W. W. Hilborn, Leamington.	under good	under good	under good		average.	over good	over good	over	under
WENTWORTH.									
M. Petit, Winona.		under good	average good	over good	over good	under good	over good	average good	
A. W. Peart, Burlington.	over good	over good	over good	average good	over good	under good	average good	under good	
LINCOLN.									
L. Woolverton, Grimsby.	over good	under good	average good	over good	over good	under good	over good		
S. M. Culp, Beamsville		under good	average good	over good	over good	under good	over good		
W. H. Bunting, St. Catharines.	over good	under good	under good	over good	over good	under good	average		average
SIMCOE.									
C. L. Stephens, Orillia.	over good	most varieties under average.							
G. C. Caston, Craighurst.	over good	most varieties about average.							
W. W. Cox, Collingwood.	average good	average good	average good	average good	average good	All varieties an average.			
GREY.									
J. G. Mitchell, Clarksburg.	average good	under good	average good	over good	over good	average good	average good	average good	
BRUCE.									
A. E. Sherrington, Walkerton.	average good					All varieties average crop.			
ONTARIO.									
R. L. Huggard, Whitby.	average good		over good	over good	over good	average good	under good	under good	over good
NORTHUMBERLAND.									
H. J. Snelgrove, Cobourg.	over good	under good	over good	over good		All varieties an average crop.			
PRINCE EDWARD CO.—	over good	under good	over good	over good		All varieties an average crop.			
W. H. Dempsey, Trenton.									
Harold Jones, Maitland		Most varieties over			average.				
VICTORIA.									
Thos. Beall, Lindsay.		Most varieties average.				average good	average good		
RENFREW.									
R. B. Whyte, Ottawa.	average good	Most varieries average.							
ALGOMA.									
Chas. Young, Richard's Landing.	most varieties grown are over.						Varieties grown average.		

Key—QUANTITY denoted by average. QUALITY by Good.
over " Fair.
undr " Bad.

PEACHES.					PLUMS.					GRAPES.	
Alexander.	Triumph	Crawford	Elberta	Smock	Bradshaw	Washingt'n	Yellow Egg	Burbank	Lombard	Concord	Rogers
over good	over				under					over	
over good	over good	average good	over good	over good	over good	average bad	average good	over good	over good		
over good	over	average good	over good	over good	average good	average bad	average good	under good	under good	over good	average good
over good	over good	under good	average good	over good	average good	over bad	over good				
									over	over good	average good
over good	over good	under		over good							
					Most	varieties	under.				
					Most	varieties	under.				
	All va	rieties a	verage.								
	All va	rieties a	verage.		over good	over good	over good		over good		
					over good	over good	over good	under good			
					Most	varieties	under.				
					Most	varieties	under;	rotting			
					Most	varieties	under.				
					Not	much	grown.				under.
					Most	varieties	average.				

Notes on Fruit Crop Reports.

W. W. Hillborn:—Very few grape vines about Leamington old enough to bear fruit; nearly all were killed at the same time the peach trees were destroyed.

M. Pettit:—All kinds of fruit trees are looking healthy and free from fungus. There are fewer insect enemies than usual.

A. W. Peart:—Conditions have been unfavorable for fungi, and the canker worm and tent caterpillar are being kept pretty well under control.

W. H. Bunting:—The most serious effects of the frosts of May 9th and 10th are found in the Early Crawford peach orchards; where far removed from water, nearly all crops destroyed. A large percentage of the fruit buds were destroyed. Insects and fungi very little; the tent caterpillar has appeared in unsprayed orchards; the peach curl is not serious; apples are particularly fine and clear of scab; and altogether the fruit crop should be fairly satisfactory this season if a proper distribution of it can be made.

Stanley Spillett:—A small mite attacked the pear leaves, causing the leaf to have a blistered appearance; currants last year were attacked by the same or a similar insect, which works from the under side of the leaf. I found dusting with powder of Paris green and lime beneficial. The gooseberry worm made its appearance ten days ago in myriads, but one application of twelve ounces of Paris green to 45 gals. of water, with milk of lime destroyed them. Gooseberry mildew has not yet appeared.

I. G. Mitchell:—No trouble whatever from insects or fungi so far.

W. W. Cox:—I am surprised the pears and apples look so clean and good, for it rains everytime we spray. We had it wet and cold all spring, and I am surprised that so much fruit has set.

H. J. Snelgrove:—There is a marked absence of noxious insects and fungi this season. June bugs destroyed the buds and blossoms of the plum trees in many places. In Northumberland County, horticulturists have found the Fameuse apple stung with an insect which appears in effect to resemble the curculio. This pest has not been noticed in this district before and is a mystery. Spraying was never practised so generally as this season.

W. H. Dempsey:—Insects have not been as numerous as in other seasons. Fungus is growing fast on some varieties of fruit.

H. Jones:—Fameuse, which is largely grown here, has set a good crop, and are well formed and growing rapidly. Fungi is showing where spraying has been omitted. Very few insects, but the Tussock moth is appearing in large numbers in some orchards.

Thos Beall:—The outlook for fruit growers is rather gloomy this season. Pear bloom first apon May 17th; from that date until June 14th, 28 days, rain fell on twenty-one days. Consequently the apple crops in this section will be much under the average. Grape vines are healthy but late, and I think they will not ripen their fruit this season.

Charles Young:—A cold, wet spring, but fruit trees have set twice the fruit they ought to mature. If the crops throughout Ontario can be judged by that in St. Joseph Island, there will no $5 00 a barrel paid this season. I have no hesitation in saying that all Japan plums are hardier than European, and even hardier than some of the Americans

BOOKS FOR FRUIT GROWERS.

Orders for any of the following books, accompanied by the Cash may be sent to Editor Canadian Horticulturist, Grimsby, and the books will be forwarded at prices noted, postpaid.

FRUIT, FLOWERS, ETC.

Apple Culture, Field Notes on. Bailey.	$0.75
Bulbs and Tuberous Rooted Plants. C. L. Allen	1.50
Bush Fruits Prof. A. Card	1.50
Chrysanthemum Culture. Morton. Cloth	1.00
Chrysanthemums, How to Grow	.25
Cider Makers' Handbook. Trowbridge	1.00
Cranberries, Cape Cod. James Webb. Paper	.40
Cranberry Culture. White	1.00
Crops, Spraying. Clarence M. Weed	.25
Dahlia, The. Lawrence K. Peacock	.30
Floriculture, Practical. Peter Henderson	1.50
Florida Fruits, and How to Raise Them. Harcourt	1.25
Flower Garden, Beautiful. Matthews	.40
Fruit Culturist, American. Thomas	2.50
Fruit Grower, Practical. Maynard	.50
Fruit Harvesting, Marketing, etc. F. A. Waugh	1.00
Fruit, The. P. Barry	1.50
Fumigation Methods. Willis G. Johnson	1.50
Fungi and Fungicides. Clarence M. Weed. Cloth $1.00, paper	.50
Garden Making. Prof. L H. Bailey	1.00
Grape Culturist. A. S. Fuller	1.50
Grape Grower's Guide. Charlton	.75
Grape Growing and Wine Making, American. Prof. George Husmann	1.50
Greenhouse Construction. Prof. L. R. Taft.	1.50
Greenhouse Management. Prof. L. R. Taft.	1.50
Horticulture, Annals of. Prof. L. H. Bailey.	1.00
Horticulturist's Rule Book. Prof L. H. Bailey	.75
House Plants and How to Succeed with Them. Lizzie Page Hillhouse	1.00
Insects Injurious to Fruits. Saunders	2.00
Irrigation Farming. L. M. Wilcox	2.00
New Horticulture, The. H. A. Stringfellow	1.00
Nursery Book. Prof. L. H. Bailey. Cloth	1.00
Nut Culturist, The. Andrew S. Fuller	1.50
Peach Culture. Fulton. Revised edition	1.00
Pear Culture for Profit. Quinn. New and revised edition	1.00
Plants, Handbook of. Peter Henderson. New enlarged edition	3.00
Plants, Propagation of. A. S. Fuller	1.50
Plants, Your. James Sheehan	.40
Plums and Plum Culture. F. A. Waugh	1.50
Principles of Fruit Growing. Prof. L. H. Bailey	1.25
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Rose, Parsons on the	1.00
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Strawberry, The A B C of the. T. B. Terry A. I. Root	.50
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Water Garden, The. William Tricker	2.00
Window Flower Garden. Heinrich	.50

Fig. 2359. Stark Apple.

THE
CANADIAN HORTICULTURIST

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THE STARK APPLE

A COMPETITOR OF THE BEN DAVIS—AS GOOD A SHIPPER—BETTER IN QUALITY

RECENTLY we received the following letter from Mr. A. C. Sabean, Rossway, Nova Scotia :

SIR,—I mail you an apple for name. It was grown in a neighboring orchard under the name of Stark. The tree is a strong grower and of spreading habit. Please identify the apple and if convenient please give a description of the Stark in the Canadian Horticulturist. Is this a true Stark; is it a fair sample compared with those grown in Ontario?

The apple came to hand in good condition, and it is a fair sample of Stark as grown here. We do not know of the variety being much grown in Ontario, except by Mr. W. H. Dempsey, of Trenton, who has a good many bearing trees, the fruit of which he often shows at our winter meetings. Mr. Dempsey considers it one of the best commercial apples and one which compares favorably with the Ben Davis for profit, while at the same time surpasses it somewhat in quality. He finds it an excellent shipper, not easily showing bruises, and a good seller in the foreign market.

The frontispiece is made from a photograph of a Stark apple grown by Mr. Dempsey in 1898, which we find in our collection. The following is a description of it.

Origin.—Ohio.

Tree.—A stout, vigorous grower, productive.

Fruit.—Large, 3½ x 3½ inches; form roundish, slightly one sided, somewhat conical; skin covered with shades and splashes of light and dark red on a greenish yellow ground, thickly sprinkled with brown dots; stalk one-half inch long, stout, in a small cavity of medium depth, calyx large, half closed in a large shallow plaited basin; flesh yellowish white; texture a little coarse, firm and moderately juicy; flavor, mild subacid, good.

Season.—January to May.

Quality.—Dessert, poor; cooking, good.

Value.—Home market, fair; foreign market, good.

In response to our inquiries regarding the behavior of the Stark apple in Ontario, we have received the following :

W. H. Dempsey, Trenton, Ont.:—"The tree has made very rapid growth; the foliage is large, dark green in color and somewhat subject to fungus; very productive every alternate year; the fruit is large, clean, dull in color and not so attractive in appearance

as many other varieties, and it is a first-class commercial apple only for this fault. In some localities it has been shipped under the name of Baldwin."

Sam Nesbitt, Brighton, Ont.:—"In respect to the Stark apple I have always found it to be an exceedingly good shipper for export, as it apparently stood the passage over better than most any other apple in the months of February and March. There was one other point in its favor and that is that it never discoloured. Whether this will hold good after it has been out as long a time as Baldwins is a question that only the future will decide. The tree is a most prolific bearer, and the only objection that I have to the apples (and the same thing applies to buyers in the United Kingdom), is the fact that they are not the right shade of red, making it difficult for the people who sell fancy apples to polish them and make the display that is necessary to catch the eye of the consumer.

Harold Jones, Maitland :—"In this section, where Spys and Baldwins cannot be successfully grown, the Stark has come to stay. It is perfectly hardy and a heavy bearer. The fruit keeps well into April. The color is a little dull, but the size and other good qualities mentioned places it near the top of the list as a desirable winter apple for the St. Lawrence valley.

"When attending the Fruit Institute meetings last winter I included Stark in a short list of best winters for planting in the commercial orchard."

AMMONIA-COPPER CARBONATE

BY

PROF. L. LOCHHEAD

O. A. C., GUELPH, ONT.

THIS fungicide is a valuable one at certain times because it will not discolor the fruit as Bordeaux does. It is neither as effective nor as cheap as Bordeaux, hence is seldom used in the ordinary spraying operations of the orchard. The proportions recommended in the preparation of this solution are as follows :

Copper-Carbonate ....5 ozs.
Ammonia, about 3 pints (just enough to dissolve the Copper-Carbonate).
Water.....50 gallons.

Or, if we want to make up a smaller amount, say 10 gallons, use the following :

Copper-Carbonate ....1 oz.
Ammonia.....a little more than ½ pint.
Water.....10 gallons.

The best way to prepare the solution is to make a thin paste of the carbonate first of all, and then dilute one-third of the ammonia with seven or eight times its volume of water, and pour this over the paste of carbonate. Then the mixture should be stirred vigorously and allowed to stand until the undissolved portion of the carbonate has settled to the bottom. The clear liquor is then poured off. To the undissolved portion of carbonate add a second, one-third of the ammonia diluted as before with seven or eight times its volume of water. The mixture is again stirred and allowed to settle. When the clear liquid is again poured off, the remaining undissolved portion of carbonate may be treated with the remainder of the ammonia. In this way the carbonate is all brought into solution, which is then made up to the required strength. Rain water should be used, else a heavy cloudy precipitate may be formed, which is often mistaken for undissolved copper-carbonate. The solution is of a clear, light blue color and will not injure even the most tender fruits.

Notes and Comments

THE RED ASTRACHAN APPLE

THIS beautiful apple was introduced into England from Sweden in 1816, and since the Early Harvest has become so badly affected with scab, the Astrachan has of late been largely planted in Ontario as an early summer apple. The tree grows to be a large size, and is very productive ; one at Maplehurst, forty years planted, gave a yield of ten barrels in 1895, which is not unusual, so that when prices are good this apple is very remunerative. The quality is only fair, and very tart ; but the large size of the fruit, and its deep crimson color, often covered with a thin whitish bloom, makes it very salable.

During the last four years New York State and Ontario have been producing this apple in such quantity that after the first two or three pickings the price has been very low and we have been compelled to seek for a distant market. The apple is so tender that it is impossible to land it in the British markets in good condition except by cold storage, held at a temperature of about 33° F., a condition which it has hitherto been difficult to ensure. A special officer, however, has been charged with this work by the Hon. Sidney Fisher, and we hope for complete success during the coming season.

FIG. 2360. RED ASTRACHAN APPLE.

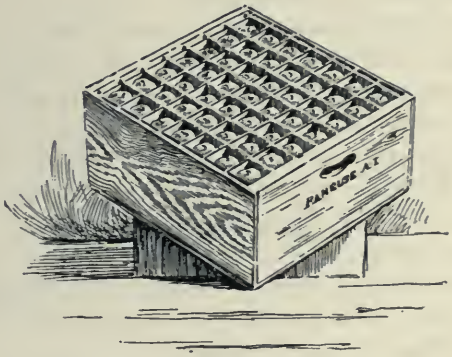


FIG. 2361. COCHRAN FRUIT CASE.

A MAGNIFICENT CROP OF ASTRACHANS

NEVER before has the promise of this variety been so fine as at present. One hundred and twenty large trees of it at Maplehurst are almost breaking down with the weight of clean, beautiful fruit, and all the finest are destined for export. They will be packed in cases with fillers, similar to the Cochran Case (Fig. 2361), only smaller, and weighing about 40 lbs. each. Each apple will have its own separate compartment, and all the apples in a case will be selected to one size. Astrachans will go in about three sizes in all, viz.: 2¼, 2½ and 2¾ inches in diameter. The cases cost about 20 cents each, and four of them will hold about the same quantity as an apple barrel. Several shippers will join us in making up car-lots of these tender apples, beginning early in August.

GOOD MARKETS AT HOME IF ONLY ACCESSIBLE

IT is astonishing what quantities of fruit can be sold right at home, in our own Ontario, if only some scheme of easier distribution were in operation. Our province is full of villages where no fruit is offered, and yet where not only the villages, but the farmers about, would be most eager to purchase it. May we not hope that the extension of the electric trolley, and perhaps the automobile freight wagon will by and by help us to reach all these country sections and wonderfully help the commercial fruit grower to dispose of his fruit crop to advantage, without the great risk of loss attending distant shipments.

"I have a special method of my own of selling my Red Astrachans," said Mr. Willoughby, of Beamsville; "I have an acquaintance with the retail trade in some of the northern towns, and I send my teams direct to the stores with them, and get the very best price for them, with no expenses for freight and commission to be subtracted. In the year 1896 for example, I sold 1,000 baskets of Astrachan apples in this way, a large part of which averaged me 50 cents a basket, and that is better than you can do by exporting them."

CHANCES FOR EXPORT OF FRUIT

MR. JOSEPH CHEAL, F. R. H. S., of Crawley, Sussex, England, a horticultural author and practical expert in gardening and fruit growing, called on us the 2nd of July. He expressed himself as particularly interested in the conditions for commercial fruit growing afforded by our country. Unfortunately for English fruit growers, much better rates were allowed for carriage of Canadian fruit, on the English railways, than for that which is home grown, but in spite of this discouragement there are many large commercial orchards in Great Britain. The present season is a most depressing one to the English fruit growers, for most unfavorable weather has prevailed, and supplies of apples, pears and plums will be very short.

Mr. Alexander McNeill, of Ottawa, who came in company with Mr. Cheal, reports failures of our fruit crop in several important parts of Ontario. There are scarcely any peaches in Essex, for the orchards were all cleaned out in the winter of 1898, and the newly set trees are not yet in bearing. Thousands of acres however, are being planted to peaches in Essex, so that in a year or two there will be immense quantities produced. The apple is very poor in quality in many parts of Northern Ontario, owing to prevalence of apple scab, which has been developed by excessive wet weather. Both leaves and fruit are blackened by this fungus in some places.

Mr. C. W. VanDuzer said, "I doubt the wisdom of trying to export fruit under the present conditions of transportation; the risk of loss is too great as things are, and I think I can do best at home."

"The Dominion Government," said Mr. McKinnon, "should buy fruit for experimental shipments, and have a packing house where the grading and packing should be done after the most approved fashion, and the work should be carried on until the most complete success is attained. If the Department of Agriculture, with all its means and influence, is afraid to undertake the risk, how can private shippers be expected to enter upon this business. I should like to know, said he, how it is that the temperature is not more quickly brought down in cold storage after the steamer leaves port. One of the thermographs showed that it was three days after sailing before the temperature was reduced to 40° F.!"

"Well," said Alex. McNeill, "this is work which I, as acting chief of the fruit division, will undertake to look after this

season. If the shippers will put up the fruit, I will have a careful oversight of it from the time it leaves the orchard until it is safely stored on shipboard, and Mr. W. A. McKinnon will meet it on arrival in Great Britain, so I think we ought to succeed this season."

SHORTENING-IN PRUNING

PRACTICAL experience in fruit growing has brought about some very radical changes in our views of orchard pruning. At one time our theory was: "Pruning is a thrust at the vitality of the tree, and the less of it the better," but now we are convinced this notion is entirely erroneous. We find the unpruned apple orchards void of fruit, even in this year of enormous fruitage; fruit spurs are stunted with dense shade, and produce nothing, while the tree itself is wasting energy in trying to thin out its own wood, and is choked with half dead and weak growing branches; while those trees which have been carefully pruned each year, are carrying loads of fine fruit, on vigorous wood.

ANNUAL CROPS THE RESULT

"I SHORTEN-IN all my apple trees every year," said Mr. Brennan. "Here is a row of Spys and Baldwins which produce fruit every year. The secret is in the pruning and thinning. That tree is forty years old, and I do not intend to allow it to grow any larger, but will cut it back every spring, to encourage young wood growth, and this young growth is the bearing wood of the following year. I treat plum and pear trees just the same way. I was led to prune as I do by the success of the renewal system in pruning grapes. I argued that if this method applied to grapes why not to other fruits?"

When do you prune?

Mostly in early spring. My aim is to produce plenty of young vigorous wood every year, and then I expect good fruit on it the following year. I reduce the amount of bearing wood that I may always have plenty that is fresh and vigorous.

Do you manure heavily?

Yes, I give a heavy annual dressing of ashes and bone dust, and couple with this clean and constant cultivation until August.

For a long time this Journal has been advocating the thinning of fruit, both to save the vigor of the tree and also to secure fine fruit; but never until now, have we found an orchardist carrying out the practice in a whole orchard. No wonder Mr. Brennan succeeds in making as much money off his fifteen acres as many a man does off his one hundred.

THINNING PEACHES

MR. BRENNAN says he finds the **Alexander** peach one of his most profitable varieties. Of course it is inclined to overbear and consequently to be small and worthless, but he prevents this by two methods of thinning. The first is by pruning. He shortens the peach wood every spring, never allowing the tree to grow beyond a certain size. This method not only thins out a portion of the bearing wood, but encourages a certain amount of new wood growth for the following year's fruitage. It also develops young growth from the ground up, so that he has no waste, barren wood, and his whole tree is within easy reach for thinning, spraying and fruit harvesting. One tree was pointed out which was fifteen years planted. That tree, said he, will never be allowed to grow any taller or spread any wider. The trees in the orchard are only twelve feet apart each way, and yet by his method of shortening back all vigorous growth every spring, they have abundance of room.

The second method is by removing a portion of the young fruit in June. Walking

through his Alexander orchard on the 28th of June, we found the ground literally covered with young fruit. "People," said Mr. Brennan, "are calling me a fool to waste my fruit like this, but I have learned by experience that thinning pays."

What portion do you take off?

Well, from those overloaded Alexanders, fully one-half. Here is a tree from which I took 1700 peaches on the 26th of June. The tree could never carry that quantity to perfection. Why, 100 peaches, well grown, would fill a twelve quart basket, and that tree was carrying enough peaches to fill over 30 twelve quart baskets! while eight or ten baskets is all it could possibly mature, to any size.

OVERCROPPING

THIS principle applies equally to all fruits. If the tree overbears in one season, it cannot recover itself in time to produce a crop the year following, so that apples, pears and plums all need similar thinning of the fruit and similar shortening of the branches. "By this system of shortening," said he, "I get fruit every year from Spys, Kings and Baldwins, because I always encourage a certain amount of young wood growth, even in a season of heavy bearing, and this produces fruit the succeeding year."

The following from the Journal of Horticulture, England, goes to establish Mr. Brennan's method:

"In the whole gardening practice there is no greater mistake than that of overcropping. It is bad in every department, but worst of all with fruit, for not only are the trees incommoded during one season, and prevented from giving good fruit, but they are often seriously checked for another year, a more important point even than the other. The effects upon peaches and nectarines are very marked. The trees are called upon to droduce about twice as many stones as are necessary and this takes far more out of them than the production of the edible part or flesh.

But the strain upon the trees is so great that even the small amount of flesh upon the fruit is not worth anything. It is poor in flavor, and the fruits usually drop before they are properly ripe. Instead then, of having, say a hundred fine luscious peaches, or highly flavored nectarines, upon any given tree, we have, if the fruit is not properly thinned, perhaps double that number, and out of all, not a score of fruits that one could possibly send to a nobleman's table or a high class fruiterer's shop.

Apples on small trees are often badly treated in this way. With large orchard trees there is a great difficulty in thinning, and without a doubt, this combined with the let alone principle on which the trees are treated, is responsible for their often bearing once in two years. But with small trees there is no necessity for this. The fruits can mostly be thinned by hand from the ground or from a short pair of steps, and the increased value of the produce is out of all proportion greater than the trouble involved.

Even small and bush fruits may with advantage have attention in this way. Gooseberries, currants and even strawberries, unless there is a good demand for cooking fruit, should be well thinned. It is just now that the result of not thinning is most apparent, and I would ask any thinking producer to have a look round the nearest fruit plantation to him. In nine cases out of ten he will find this season's trees overburdened with small and comparatively useless fruit, that with judicious thinning might have been useful and profitable to the grower.

EARLY TOMATOES PROFITABLE

I FIND my early tomatoes about my most paying crop, said Mr. Wm. Armstrong of Queenston. I have made a business of

growing my own plants for early fruit for the last five years, with such success that now I set annually from 12,000 to 15,000 plants.

It was a delightful visit to Mr. Armstrong's home, on the 29th of Jnne ; it is situated on the bank of the Niagara River and his place is known as Riverside Fruit Farm.

How early do you ripen your first tomatoes? we enquired.

Usually by the first of July and sometimes sooner.

What is your favorite variety?

I prefer the Atlantic Prize to any other variety. It is flat, roundish, not too large, and excellent for slicing up for table use. I make it a special point to carefully select the seed from the finest specimens each year for my own planting, so that my strain of Atlantic Prize tomatoes is much better than any which can be bought under that name. Ignotum I find too large and too shy in bearing for profit.

PROFIT IN PLUMS

Do you consider plums profitable?

I do. Come and see my orchard for yourself. Mr. Armstrong showed us through an acre of land planted chiefly with Niagara and Washington plum trees heavily laden with fruit. It was fenced in and contained some fowls, which, he said, accounts for the fact that no curculio can be found in it. These, said Mr. Armstrong, are in my opinion the best commercial varieties. True, Washington is somewhat tender in flesh, but I have no trouble sending it to a near market like Toronto in perfect condition. Our Toronto boats leave at 7 and 11 o'clock a. m. and by shipping them the same day they are gathered, they reach Toronto by boat in perfect condition.

One Niagara tree about ten years planted, Mr. Armstrong estimated, would yield fifteen baskets of plums; surely it is difficult to estimate the cash value of such a tree!

Peaches, grapes, strawberries, plums and tomatoes, seem to be Mr. Armstrong's specialties, and in the latter we know of no one who excels him. He is surrounded by the fruit farms of men whose names are familiar, as for example, Carl E. Fisher, secretary of the Niagara Peninsula Fruit Growers' Association ; Major Sheppard, the Farmers' Institute lecturer ; and Mr. Vrooman, one of the early settlers of Queenston. In location it is most picturesque, with the Toronto boats in full view in old Niagara river, and the cliff rising up gradually in close proximity, surmounted by the famous monument to Sir Isaac Brock.

SUCCESS WITH PLUMS

THE Lombard is an enormous cropper, and this is the great fault with it, because the fruit is consequently small, and, growing in such clusters, is very subject to rot. If thinning is needed with any fruit it is surely needed in the case of the Lombard, and that with no stinted hand, for in this way alone can we succeed in producing such fruit as will command remunerative prices.

One of the finest young plum orchards we have seen belongs to Mr. George Davis, Beamsville, who took great pride in showing us what a magnificent load of Lombards the trees were carrying. There were 200 trees per acre, from five to eight years planted on clay loam, and such immense loads of fruit are seldom seen in a whole orchard. Mr. Davis said he had been wishing for curculio to come along and thin out his Lombards and save him the work, which he could see was positively necessary to secure fruit of any size. "I manure heavily," said he, "and I think that, in part, accounts for the enormous yield. I give a load of barn manure to every seven or eight trees, or about thirty tons an acre, and this I repeat every year. The result is evident in the wonderful thrift of the trees."

"I would not plant Lombards for profit," said Alex. Glass of Jordan, the well known originator of the Glass plum. "In my orchard of 800 trees I have only eight or ten trees of Lombard. I count it the poorest plum I grow."

What are your most profitable varieties?

"The Prince of Wales I count my first for profit; it is the best for all purposes. My choice of six best kinds for the commercial orchard is: – Prince of Wales, Goliath, Bradshaw, Coe and Reine Claude.

"It is strange," said Ira VanDuzer, a prominent fruit grower of Winona, "that this year there is a general failure in many plum sections of Glass, Quackenbos and Columbia varieties, which by the way very much resemble each other. On the other hand Bradshaw and German prune are giving a most exceptional yield."

MAIN CROP STRAWBERRIES

"GIVEN the right soil," said Mr. E. B. Stevenson, our strawberry experimenter, who is now located at Jordan Station, "no fruit is more profitable than the strawberry. Look at the tremendous rows of fruit on these rows of Clyde, a variety that cannot be surpassed for productiveness, where there is enough moisture in the soil. As a rule it is far more productive than the Williams, except on light, dry soils, but of course it is not as firm for the long shipments. The Williams is largely grown for market, but, in my opinion, it is inferior to Saunders, which I would place first for main crop; this latter is a Canadian berry, large, bright, firm, and of good quality. It ripens all over, and is just as good a shipper as Williams."

What is the best late berry?

Well here is one which was introduced by J. H. Hale, the eminent peach grower. He says it is the latest berry on earth, and catalogues the plants at $1.00 each! He has christened it Hales 11.59 P. M. You see it is not yet (June 20), beginning to ripen, and Michel is nearly over. However it is not the only late berry; J. H. Black, of New Jersey, has been sending out some "pedigree stock," as he calls it, among others a variety called the Joe which is probably as late as Hales.

FANCY BERRIES

Have you any fancy berry for the amateur excelling the Jessie?

Well yes, I would say that either the Woolverton, or the New York is quite as desirable in the home garden, though of course Jessie is excellent in quality. The Marshall is an excellent berry too for the amateur; it needs rich, moist soil to do well, and it is usually almost as profitable for market growers as the Clyde. It is almost as early as Michel. A new berry from Michigan is one of the most promising of this year's introductions, being wonderfully large and productive. It is called Uncle Jim.

A full report on strawberries by Mr. Stevenson, will be published in the next annual report of the Ontario Fruit Stations.

RAPID INCREASE OF STRAWBERRY PLANTS

Speaking in The Sun of the rapidity with which a large strawberry plantation may be developed from a small beginning, Prof. Hutt, of the O. A. C., said: "People hardly realize how soon a very considerable area of strawberries can be developed from the experimental lots sent out from the college. Let me give you an illustration: Last year we set out a lot of strawberries of different varieties at the college grounds, for the purpose of seeing to what extent these would increase. The result was astonishing. The number of new plants developed from a single parent stem in one season on the average was—for the different varieties named—as follows: Sadie, 100; Ruby 85; Standard, 53; No Name, 51; Burt, 48; Buster, 47; Warfield, 42; William Belt, 41; Clyde, 38;

Glen Mary, 37 ; Wesley, 36 ; Van Deman and Fountain, 32 each ; Irene and Haverland, 31 ; Anna Kennedy, 30 ; Jucunda, 23. Lumping together the results with all these standards, it was found that the average number of new plants developed from each parent was 49. It does not take long to work into a strawberry plantation at that rate, does it? There is to be remembered, also, the fact that while it is quite a common thing to have failures with plants sent from a distance, it is a rare thing to have failure in replanting from your own parent stock."

POSSIBLE YIELD OF STRAWBERRIES

The wretchedly small yields obtained by some strawberry growers are due either to a too dry sandy soil or poor cultivation. The immense yields that have been sometimes taken from small plantations, prove what great possibilities lie within our reach in the growing of this most popular fruit. The following statement concerning the yield of this fruit would be ridiculed by some were it not made by Prof. Macoun, whose veracity no one doubts. He says in the Maritime Farmer :

" It is possible to grow 10,000 quarts of strawberries on an acre of land in one season. At the Central Experimental Farm on a small plot the yield has been as high as at the rate of 13,934 quart boxes per acre. The average yield obtained however is from 5,000 to 6,000 boxes per acre, but the higher yields are something to work for. Further details regarding the culture of strawberries are published in the Experimental Farm's reports and bulletins. More than 350 varieties have been tested at Ottawa, of which the following, after having been given a thorough trial, have proven the best : P = pistillate or imperfect flowers. B = Bisexual or perfect flowers :

Warfield, P....	Early	For market.
Beder Wood, B.	"	Good pollenizer. Productive.
Glen Mary, B..	Medium	For home market.
Greenville, P..	"	Home use or home market.
Haverland, P ..	Medium	Market.
Bubach, P.....	"	Home use or market.
Williams, B....	"	Market.
Buster, P.....	Late	Home use or market.
Howard's No. 41 P.....	"	Market.

" In addition to the above, Marshall, B, William Belt, B, Nick Ohmer, B, and Brandywine, B, are excellent for home use but are not as certain to yield well. Clyde, B, is a heavy yielding berry some years, but is uncertain, as it suffers badly in dry hot weather."

CHERRIES AND CHERRY BIRDS

THE Board of Control of our fruit stations met at Maplehurst on the 5th of July. The new varieties of Duke cherries were of especial interest to the chairman, Dr. James Mills. There were five varieties noted down as suitable to keep up a succession for the market, and carrying immense loads of fruit for their age, viz. in order of ripening :—May Duke, Royal Duke, California Advance, Late Duke and Louis Philippe, the first of which is over long before the latter begins ripening. These Dukes are a class of cherries which are a mean between the sweet and the sour cherries, and most desirable for all household uses. The peculiar upright habit and the close and continuous clustering of the fruit upon the underside of the long upright branches, at once distinguish the trees from those of other classes. One special variety of this class, the Reine Hortense, was especially admired because of its immense size, and excellent flavor, but it is not as productive as the others.

I have had great trouble with cherry birds this season, said Mr. Orr. I have shot two hundred and fifty waxwings and in spite of me they have eaten up all my Early Purple cherries. That variety, we remarked, is the first cherry of the season and it is especially tender and tempting to the birds ; we have

concluded that the commercial cherry grower needs to plant the firmer varieties, which are not subject to their ravages.

"I question," said Mr. W. N. Hutt, "the wisdom of shooting those waxwings, indeed the legality of it. I believe they are insectivorous birds, and friends of the fruit grower, and should be protected. Surely some other means of protecting the cherries could be adopted, and the lives of these birds preserved."

"I have always read", said Mr. Orr, "that cherries succeed best on sandy loam ; but that is contrary to my experience. I have planted Early Purple and Windsor on both sand and clay, and I have found the trees much more productive on clay, healthier and longer lived."

FEEDING BIRDS ON CHERRIES

MR. GEORGE F. POWELL says he plants a quantity of the early varieties, sweet cherries, purposely for the birds to eat, especially such varieties as Coe's Transparent, Gov. Wood and May Duke. These trees, he says in Rural New Yorker, are given up entirely to the birds.

I have made it a practice in planting cherry orchards to put in a quantity of trees of the early varieties of sweet cherries, such as Coe's Transparent, Gov. Wood and May Duke. We never pick them and never allow a bird to be frightened from the trees. They live upon these, and by the time our more valuable cherries, such as Black Tartarian, Black Eagle, Napoleon and Windsor are ripe we have no trouble from the robins. There will not be even two per cent. of these fine cherries picked or damaged by the birds. If every one would make it a point to put in a few extra trees of these early, juicy, sweet cherries, they would have little trouble with their more valuable varieties. Rather than kill off the birds I would plant cherries and give them the entire crop. It is one of the great drawbacks that we have so few birds inhabiting our orchards, in consequence of which we are forced to carry out the expensive process of spraying, without which comparatively little fruit of value could be produced. It is a great mistake on the part of fruit growers to kill off the birds, and I find that it not only economical to plant cherry trees for them, but I find that it brings larger numbers to my place, and they are very helpful in keeping down many insects that are not destroyed by spraying.

THE MAPLE AS A SHADE TREE

A LETTER FROM ALEX. M'NEILL, OF WALKERVILLE

SIR,—I have on several occasions when speaking to our Societies in different towns and cities, regretted the fact that our people plant the maple so exclusively as a shade tree. The maple is indeed a beautiful tree, and I hope the time may never come when it will not be extensively planted; but a recent visit which I made to the city of Burlington, Vt., would have convinced me had I not already been convinced, that the American Elm is superior in every respect. It is comparatively free from attacks of insects, has a most graceful form, and endures the hardships of street and park life quite as well as any tree that is is planted. The streets and parks of Burlington have many notable examples of the great beauty of the American elm as a shade tree ; and there is no reason why our towns and cities should not use a greater variety of shade trees than they do, and when a selection is made there should always be a large proportion of that "forest on a single tree"—the elm. This tree grows nowhere in greater perfection than it does in Ontario.

MEN WHO HAVE SUCCEEDED—V

J. H. HALE

THE EXTRAORDINARY PERSONAL STORY OF THE MAN WHO FIRST PLANTED LARGE PEACH ORCHARDS IN CONNECTICUT AND GEORGIA, AND WHOSE WORK HAS BEEN AN IMPULSE TO PEACH-GROWING THROUGHOUT THE COUNTRY, AS TOLD BY HIMSELF IN "THE WORLD'S WORK."

BORN and reared on a little Connecticut farm, with a love of fruits inherited from ancestors on both sides, I have among my earliest recollections the seedling peach trees along the fence row. The little Red Rareripe peaches that clustered on these bushy old trees every September were beautiful as

FIG. 2362. J. H. HALE.

a Crimson Rambler rose to-day. One old tree, more sturdy than the rest, and fruiting every year, strongly attracted me, especially after I had learned that it was over seventy years old. If a tree could fruit like that under such conditions, what might not be hoped for with better varieties and better culture?

My father died in early boyhood, and mother and children were kept hustling to get a living and keep up the interest on the mortgage. A shovel, a spade, and a little old hand-cart were our only implements. The question of how to start a peach orchard had to give way to the more pressing question of how to get enough to eat from day to day. At twelve years of age I went to work by the month for a neighboring farmer, and one September day, cutting cornstalks near the beautiful valley of the Connecticut, I came across a seedling peach tree, right there in the corn field, loaded down with ripening fruit; rosy red peaches, sweet and delicious. Tired and exhausted from the heavy work of handling the cornstalks, I sat a long time under the tree, eating peaches and dreaming of the peach orchard I would have if ever I got money enough to buy the trees; and I believe the joy in the thought put such life into me that the extra work I did that afternoon more than made up for the time lost under the peach tree.

Continuing to work out by the month on farms, the fall I was fifteen found me with nearly one hundred dollars in cash. The winter following my last at school, I had been reading everything I could get on horticulture, and by spring I was ready to invest my cash in fruit trees and plants. As quick returns must be had, the start was made with strawberries and raspberries. Some cash came in the following June, and then the quarter-acre of my beginning was increased to an acre, and later to four or five acres. Keeping in view my peach dream, the first peach orchard of a few hundred

FIG. 2363. THE HALE PEACH ORCHARDS.

trees was now started, and the next year, during the fruiting season, a trip was made to Delaware to study varieties and methods. At that time, so far as I know, there was not a commercial peach orchard north of New York, and the following spring, when I planted out an orchard of 3,000 trees, it was the general opinion that the attempt to grow peaches on a commercial scale as far north as central Connecticut was a crazy scheme of an inexperienced youth, and could only result in failure.

Looking over the situation from time to time, and hunting up old fruiting trees in neighboring towns, wherever I could find them, it took but a few years to learn that the killing of fruit buds by the extreme cold of winter was one great danger to be feared. I found that side hills and tree tops had a way of sliding the frost down into the lowlands ; and by tramping around with a thermometer just at daylight some of the coldest mornings, I found temperatures varying all the way from fifteen to twenty below zero on the level and in the valleys, while on the hill sides, not over fifty feet above, the tube would show from eight to twelve below, and on the hilltops of 200 or 300 feet elevation, scarcely a mile away, the mercury would register nearly zero.

Here, then, was the place for peaches, if soil and other conditions were right. By straining to the utmost my slender resources and depending upon the berry fields for ready cash to keep the venture going, I managed to secure and plant nearly 10,000 trees in two blocks. I set about leasing what I thought were suitable lands for further development in the early eighties. One block was on land owned by a widow 94 years old, who, after signing the lease with her own hand, said, " Now, I am going to live long enough to see this peach orchard in fruit. How long will it take ? " When she was told that it would be four or five years at least, and possibly longer if the winters were too severe, she smiled, and said, " Well, I will wait to see one crop, anyway." Six years later, when the first moderate crop came, I took the dear old lady,

then 100 years old, in a low and easy carriage, and drove among the trees. She picked the luscious fruit with her own hands from the bending branches, and was as happy over it as a young girl. On the way home she reminded me of her promise to stay till I had one crop, and then with a smile, and a trace of a twinkle in her bright little black eyes, said, "Does this really count for a full crop, or must I live a year or two longer to fulfill my bargain?" I assured her that this would not count, and I had the pleasure of showing her two crops after that, and taking tea with her on her 104th birthday, and it was not until six months later that she left us.

After five years of thorough culture the trees had just come to full fruiting age when three very severe winters in succession killed all the fruit buds. Deeply in debt as I was, and faced with necessity to maintain the standard of culture I believed in, my friends and well-wishers now advised the abandonment of the enterprise without sinking any more money in what seemed to them a hopeless endeavor. Anyhow, they said, the trees would live awhile without culture, and it would be time enough to spend money on them when they showed some signs of fruiting. But with my hand once to the peach plow, I did hate to turn back, and then, thinking how the Lord hates a "quitter," I began hustling to borrow more money. It was a hard struggle, but a record of reasonable industry, coupled with good habits, enabled me to find bankers who were willing to loan money on faith and energy when there was no better collateral in sight.

In that first crop I was aiming for some peaches better than the markets had ever seen before in any considerable quantity, and I deliberately picked off more than three-fourths of the young fruit, greatly to the disgust of friends who could not understand that I was insuring larger and finer fruit.

As the fruit approached ripening, plans for marketing that had been years maturing in my mind were licked into shape. It had cost so much money and waiting to reach this first crop that it seemed necessary to get all necessary profits out of it. Determined to be my own salesman, I leased a vacant store in the near-by city of Hartford, and a month before peaches were ripe, hung out a large banner announcing that a lot of "Home-grown peaches, ripened on the tree," would be on sale there after a certain

FIG. 2364. FIELD PACKING AT THE SPRING GAP ORCHARD.

date. Then I visited the leading towns in Connecticut, Massachussetts, and Rhode Island, seeklng out in each town one retail grocer or fruit dealer who handled high-grade goods. To him I told my litlle story of soil and variety selection, tillage, pruning, fertilizing and fruit thinning. I told him how the fruit was being gathered fully ripe, day by day, as it came to maturity, carefully assorted in three sizes, rejecting all unsound or imperfect specimens, packing the fruit in new baskets made of the whitest wood obtainable, every basket to be rounding full of perfect fruit of the grade, and guaranteeing uniformity of packing ; that I was jobbing the fruit myself; that prices would probably be twenty-five or fifty per cent. above the market rates, but that the fruit would be worth it ; and that I was prepared to give an exclusive agency to the one dealer in each town who would push the goods into the best family trade.

When the crop began to come in, liberal advertising in the Hartford papers started sales at once. The few outside trial orders gave such satisfaction that orders came pouring in faster than there were peaches to supply them, so that after the first week of the season the daily orders were far in excess of the supply, and prices were advanced to "what the traffic would bear." It was all cash trade, too.

With a girl to book orders and look after the cash, one boy and I worked in the store every night from six to eleven, taking the fruit from the wagons as they came from the farm, and making up the out-of-town orders. And again at four a. m. we supplied the Hartford and local trade, after which came a drive of eight miles out to the farm, there to spend the day assisting at the harvest or toning up of the weak places in the plan of picking, assorting and packing. I soon found that men, however honest, would occasionally sneak the best peaches to the top of the baskets, and that women, with quicker eye, defter fingers, and natural honesty, made the best graders and packers.

Long days, hard work and lots of fun there were in that first crop, but the greatest pleasure of all was the signing of what then seemed a big check for $2,100 that paid off the mortgage on the farm, and gave the mortgagee a chance to re-lend the money on a Kansas farm 1,500 miles away, where they could not see the borrower daily if he should depart from the orthodox ways of the neighborhood to branch off into the heresy of a new agriculture.

The peach harvest rounded up nearly $10,000 profit, from a farm that my neighbors thought three months before was not good security for a loan of $2,000. All other debts were paid, and the entire surplus was promptly invested in fertilizers for the orchard. Winter's frost destroyed all hopes of a crop the next season, and money had to be borrowed to keep things going; but only for a little while, for 1889 gave a banner crop of superb fruit, which, marketed as before, gave net profits from thirty-five acres of over $24,000. Such a fruit harvest was a novel sight in New England, and dealers, consumers and land owners from far and near flocked to the orchards by the hundreds each day. New England received a stimulus in peach growing, resulting in the planting of over 200,000 trees in the season of 1890. Continued planting since shows at the present time over 3,000,000 trees in the peach orchards of Connecticut, more than 100,000 in Rhode Island, 300,000 in Massachusetts, and not less than 50,000 in southern counties of New Hampshire.

My own planting has at least kept pace with the rest, so that now 50,000 trees in Connecticut alone represent the outgrowth of the "crazy" scheme of twenty-five years ago. Rocky hills and semi-abandoned brush pastures have been purchased ; woods, rocks and stumps have been cleared away at an expense often exceeding five and even

ten times the cost of the land itself; yet the new industry has paid all the bills, and left me a cash reward far greater than my limited education and abilities would probably have commanded in any other business or profession.

The old cornfield is now a part of my farm; peach trees by the thousand cover the hills, and in peach harvest, when 75 to 100 Italians are joyfully singing as they gather the fruit, I do not feel so lonely as I did once on that same old hill.

THE NEW YORK MARKET

ITS POSSIBILITIES FOR CANADIANS—UNLIMITED DEMAND FOR LATE STRAWBERRIES—LETTERS FROM MR. FRANCIS WAYLAND GLEN

BROOKLYN, N. Y.

BROOKLYN, N. Y., July 3rd, 1902.

SIR,—This morning my grocer charged me 18 cents per quart for strawberries. They were fine, but not the best they came from Oswego; they have been the same for the past 6 days; red raspberries, 16 cents; blackcaps, the same; good blackberries, 10 cents to 12 cents; currants, 10 cents; prime California cherries, 12 cents per pound; Georgia plums and peaches, 10 cents per quart; whortleberries, 15 cents; local cherries, 10 cents; pine apples, 12 cents each, of fine quality; red and yellow bananas, very cheap, quality best; apricots from California, 10 cents per quart. With all these fine fruits fresh and in fine condition, strawberries hold the price above quoted. Prime berries have been sold wholesale at 16 cents for the past week.

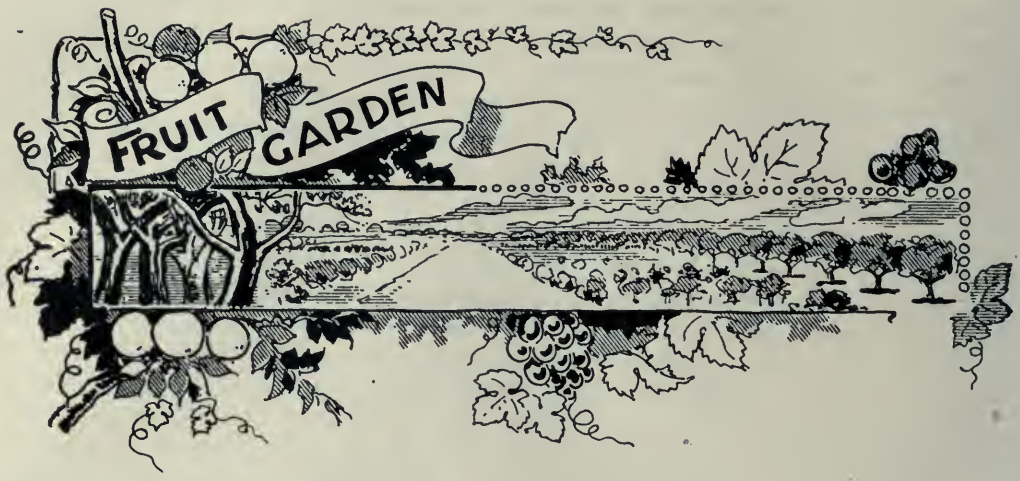
We have 10,000 grocers in this city. If they only sell 10 quarts per day each, the total sale will be 100,000 quarts per day. Then there are 2,000 retail dealers who make large sales. Now at these prices a late strawberry in Ontario would be a money maker. As a rule from June 21st to July 15th strawberries command high prices in this market. The time is near at hand when we shall have complete reciprocity in trade with Canada, then Canadian fruit growers in all the provinces east of Manitoba will have free access to the best market in the world at their very doors.

BROOKLYN, N. Y., July 10th, 1902.

SIR,—To-day strawberries bring 18 cents per box at retail, and the demand more than equals the supply. New England and New York can easily consume 500,000 quarts per day at this price after July 1st. People think that blackberries, raspberries and blackcaps are too sweet this season and currants are acid. They are quite willing to pay a large price for strawberries. N. B. and N. S. should supply New England, and Ontario New York and Pennsylvania. The market is unlimited, returns prompt in cash. A good late strawberry will net the grower 10 cents per quart. We get strawberries from Florida, Lousiana, Georgia, Tennessee, Virginia, Maryland, New Jersey, and why not from Canada?

BROOKLYN, N. Y., July 12th, 1902.

SIR,—My grocer tells me that this is the last day for strawberries for 1902 from Oswego. Some fine berries will still come to market from the North, but the price will be so high that the grocer in these parts of the city, where the very wealthy reside, will buy them all. For the past twelve days the price for good prime berries has been 16 to 18 cents per quart. At this price they should net the grower 10 cents. Wholesale price for the past few days has been 15 to 16 cents.



HINTS TO APPLE GROWERS

GOOD VARIETIES PAY—FOUR FAVORITES—TOP GRAFTING—INDIVIDUALISM IN FRUIT TREES—THE TALMAN SWEET A STOCK

BY

W. H. COARD, LL.D.

IN THE older parts of Ontario, such as the counties of Middlesex, Perth, Oxford and Brant, as well as portions of Huron, where the best apples grew in times gone by, to-day there is a great neglect of young tree planting as well as of pruning, and the natural result is a diminution in the quantity of apples grown and a decline in the quality of the fruit produced. Now, in Grey, in the northeastern part of Durham, and in the county of Northumberland, the young orchards are just about equal to the older ones in number, showing that planting is there going on vigorously.

In the former cases there is no doubt the trees were planted from some twenty-five to forty years, when there was no exact knowledge of, and, perhaps, but little experience, in varieties—when only apples were in demand, when the soil was new, when insect pests and fungous diseases were rare, and when the only skill required was simply to take the fruit. Under these circumstances the business of apple growing was exceedingly profitable; but there soon came a glut in the earlier varieties. They were not suitable for the export trade, so that as soon as the home market was supplied there was no further call for them. The soil lost something of its virgin freshness; the trees would not grow so well; and with the increased number of trees there came a quadrupled increase in fungous diseases and insect pests. Not only was there a falling off in the demand for the particular variety they were growing, but there was an increased difficulty in growing any variety; hence farmers got the idea that there was no money to be

got out of apples, and they let their orchards run wild, they allowed noxious insects to multiply and fungous diseases to run their course, with the inevitable result that the orchards were almost ruined. In the Georgian Bay district, however, it is not difficult to persuade farmers that orchards can be made to pay; but everyone should understand that to be a successful apple grower he must choose suitable varieties, adopt clean cultivation, pursue systematic pruning, spray at the proper time in the proper manner with the proper solutions, and direct careful attention to cover crops. "Where ignorance is bliss 'tis folly to be wise," is not in the science of horticulture. This the the Dominion Department of Agriculture is trying to instil into the minds of fruit growers by means of lectures and object lessons. Mr. A. McNeill, acting chief fruit inspector, is engaged in this work, and this is how he teaches the young idea how to grow fruit successfully, profitably, and ready for sale. He arranges a meeting in a central locality and spends from half an hour to an hour in-doors lecturing and answering all sorts of questions put to him by growers and others. Then he proceeds with his audience to a near-by orchard, where he commences an expedition in search of noxious insects and fungi. Having discovered a pest (aided perhaps by a magnifying glass), he next proceeds to prepare his Bordeaux mixture, and then sprays the infected parts with the force pump, taking care to demonstrate as well as to explain the difference between showering, or sprinkling, and actual spraying; for while spraying with poison is salvation to a plant, tree, or shrub, showering or sprinkling means very often destruction. All insecticides and fungicides should fall on vegetation in the most delicate spray, otherwise the tree may be injured.

Mr. McNeill found in his recent tour through the counties already named, a general belief that there were no insects this year doing any damage. His magnifier soon discovered hosts of insects. The oyster shell bark louse is very prevalent, the cigar case bearer in some districts was quite numerous, the tent caterpillar was in evidence, but not seriously, and the canker worm in some localities was very plentiful; but for multitude, the bud moth simply swarmed. The result of finding these pests where they were supposed to be conspicuous by their absence so struck the farmers that Mr. McNeill could have sold a gross of magnifiers on the spot. It was an object lesson that will never be forgotten; it was nature study in its most tangible form; it was that practical experimenting which leads to the conversion of the desert into a fruitful field, and clothes the dismal prairie with a world's grain field.

It does not always fall to the lot of a Government to witness the good results of missionary zeal, but here in Canada we are constantly reaping where we have sown, and Mr. McNeill reports that the result of the forward policy of the Minister of Agriculture has already, in the fruit section, led farmers in the older portions of Ontario, to abandon their former slovenliness and to go in for clean cultivation, while in the newer districts the fruit growers themselves so appreciate what has been done to help them that they have become living exponents of the same policy.

To secure and maintain profitable apple cultivation after following out the work necessary, everything depends upon the variety cultivated. The grower must produce what the market requires, the market will no longer be content to adapt itself to the whims of the grower. No matter how healthy or prolific a tree may be, if the fruit be not of the right variety it is valueless.

Undoubtedly winter varieties are those that are paying best.

The four varieties of apples that are receiving the most attention now are Baldwins, Ben Davis, Greenings, and Spys As these varieties cover only the fall and winter months, it is certainly not wise to overlook entirely the early sorts, because there must spring up a market for the earlier sorts as soon as the others have got the market securely.

Top grafting has received a great deal of attention this spring. The average farmer thinks there is some mystery about grafting, so it is very gratifying this year to find him amenable to culture on the point. It is gratifying to discover how many farmers are taking up grafting, for where it has been put into practice it has been eminently successful. One Ontario farmer who had never grafted a tree in his life, after hearing Mr. McNeill's lecture some time ago, top grafted a large number in his orchard, and his losses were under 3 per cent. of the number grafted.

Grafting should be made a part of every boy's education. Notwithstanding all the care the nurseryman can give to his stock, serious mistakes will be made in the varieties, and if for no other reason than that every lad should know how to perform so simple an operation as grafting.

Trees have individualism just as animals have, and for reasons that we cannot explain, one tree with apparently no better chance than another growing by its side, of the same variety, will be prolific while the other is comparatively barren.

The best orchards of the future will be those that are planted with some hardy vigorous stock like our Tallman Sweet, or Macmahon's White, and when these have formed a stock ahead at two or three years' old they may be top grafted from selected trees.

As the nurseryman practices propagation he exercises no discrimination, because his cuttings are from productive and non-productive trees alike, and more often than not they are taken from trees that have not come into bearing at all, consequently he must perpetuate a good many poor specimens.

The man who top grafts has an opportunity to examine a thousand trees, and, selecting the best can top graft his whole orchard with the confident expectation of having nearly all his trees approach very near in merit that one in the thousand that he selected for his grafting.

One reason why top grafting cannot be recommended to the average farmer indiscriminately is that he cannot be always induced to do the work in the proper time or in the proper manner. He cannot always be trusted in the matter of selection. And he is too apt to be careless and indifferent, leaving the greater number of his trees ungrafted to the serious detriment of the symmetry of the orchard.

New York School of Agriculture and Horticulture.—Mr. G. F. Powell's work at Briarcliff Manor, New York City, has already been referred to in these pages. Practical instruction is here given in all branches of Agriculture and Horticulture, with accompanying lectures and class room work. Finding the acreage at Briarcliff too limited for rapid development of the work, the trustees have purchased over 400 acres of land near Poughkeepsie for the permanent establishment of the school.

THE FRUIT CROP

APPLES FINE IN SOME PARTS, SCABBY IN OTHERS—PLUMS AND PEARS A LIGHT YIELD—PEACHES HEAVY

OUR excellent contemporary the Sun has been making some recent inquiries regarding the fruit crop, which goes to substantiate the correctness of our tabular statement in July number, as follows:

DROPPING REPORTED

T. H. Race, of the Recorder, and a director of the Ontario Fruit Growers' Association, writing from Mitchell, says: "The prospects for apples throughout this section are good. We are looking for rather more than ordinary crop if the promise at the present time holds out to a fulfilment. I notice, however, that with some varieties a heavy drop has been going on since the hot days of the past week began. This may be somewhat owing to the change of temperature, and may prove beneficial, as it was noticed that some varieties were setting very heavily, anl a few apples dropped while the cool, wet weather lasted. If the drop proves only normal, the size of the remaining fruit will be better, and the crop will be a better one that we had in either of the last two years. Some farmers are reporting that the Spys have not set well, but on close examination I find there is quite enough fruit set to make a good crop, though it is as yet owing to the cool weather too small to be readily seen. The Spy has, however, been shyer in setting than most other varieties. So far as I have seen there has been little systematic spraying owing to the continued wet weather, but notwithstanding this, there has not been so much damage done by the codling moth as in other years. It is too early to speak of fungus diseases, such as scab or black knot, so far as apples are concerned. The latter trouble is showing on the pear crop."

IN THE BANNER COUNTY

D. J. Nesbitt, writing from Brighton, the centre of the great Northumberland apple district, says that the prospect for the crop there is good, the yield promising fully equal to that of 1900. The apples will be quite clean, as there are no insect or fungus enemies except on the Snows; these latter will be somewhat spoiled. "The apples are falling off to a considerable extent," he adds. "Baldwins and Spys are going to be the best crop with us, but all kinds are fairly well loaded."

Wm. Rickard, M.P.P., of Newcastle, speaking from Durham, a close rival to Northumberland as an apple producer, says: "Apples at the beginning of the season were, generally speaking, very thick on the trees, but a great many have since fallen. In some instances the crop has actually been left thin. This may be the best all round, as the crop generally promises to be a good one."

ANOTHER BIG APPLE CENTRE

A. Gifford, of Meaford, writing from the center of the magnificent Georgian Bay fruit district, says: "Apples constitute the most important fruit crop in our section. It is too early to say just how they will turn out. Moreover, there is a great variation in the crops on adjoining farms,

but some varieties (Baldwins and Greenings) are light, while Spys are variable. Ben Davis promises fair, though many are falling. Kings and fall varieties are fair. All varieties are high colored for the time of year, but more or less spotting is already visible. Insects are not as numerous as in past seasons. As a whole, it will require very favorable weather to secure an average crop."

C. L. Stephens, the well-known horticulturist of Orillia, says that apples, so far as he can ascertain, from enquiry and observation, at present promise fairly well for quantity, and where fungus disease has not prevailed the quality and size will be extra fine. "Several varieties," adds Mr. Stephens, "are badly affected by black scab on fruit and leaves, but there is little or no trouble from any insect pest as yet. I think five and one-half bushels per tree is too high an estimate for this section, where most orchards are composed of comparatively small and young trees; four bushels will be nearer the thing. The fruit is, however, holding on well."

IN CENTRAL ONTARIO

"Everything," says Dundas and Flavelle Brothers, of Lindsay, "points to a large and good apple crop in this section of the Province." "The prospects about Oshawa," writes Edwin Worden, "are for a yield about equal to that of 1900. Quality so far is also good, the fruit being clean and large."

"Apples about St. Catharines," writes Robert Thompson, "are clean, bright, and free from insect enemies. The fruit is already beginning to show color. The crop is not quite as heavy as in 1900, but the apples are holding on well and becoming a good size for so early in the season."

IN HURON AND BRUCE

A. E. Sherrington, Fruit Station, Walkerton: "Apples promise above an average crop, but are suffering from fungus. The quality, I am afraid, is going to be poor. The fruit is holding on well, but foliage looks bad."

F. C. Elford, Homesville, Huron County: "The apple crop will not be as heavy as was anticipated, and from present appearances not as large as that of 1900. The fruit is holding on well, but is scabby."

N. D. McDougall, Tiverton, Bruce County: "The yield of apples in this section will not be as high as in 1900, this being the off year for Spys in this section. Early varieties, however, promise a good yield, but the average per tree all round will not go beyond four bushels. The fruit is clean and free from fungus and insect enemies. The apples are forming well, and hold strong to the branches."

BAY OF QUINTE DISTRICT

W. H. Dempsey, of the Fruit Station at Trenton, Bay of Quinte district: "There is a difference of opinion regarding the apple crop. Some growers say they promised a heavy yield, more than ever before; others say they expect only a little over half an average, that they cannot find more than two apples in a cluster, never three or four, and in a great many cases only single fruit. Some say, too, that the apples are dropping badly. A few people have a heavy crop of Baldwins and Kings; others have none. What orchards I have seen will not equal the estimate of 1900, 5½ bushels to a tree; about 3 bushels to a tree will be what they will give for trees from six years up to thirty or forty. There is considerable fungus, which no doubt accounts for so many apples dropping. There are no complaints from insects."

NORTH SIMCOE

G. C. Caston, Craighurst Experimental Station: "Apples generally will not be more than an average crop. Early apples

will give a good yield, but winter varieties are not above the average. The fruit is still dropping badly."

ONTARIO COUNTY

Henry Clendenning, writing from Manilla, in Ontario County, says: "The prospects of the apple crop are fair, though the wet weather has prevented rapid growth. In consequence of the wet weather the fruit is smaller than usual at this date. The fruit is holding on fairly well, but there is a good deal of black spot or scab owing to the fact that very little spraying has, on account of the wet weather, been done this year. There has not been much damage from insect pests except the leaf roller. This has attacked a number of orchards. The yield of apples will probably be about one-half to two-thirds that of the crop of 1900."

THE GEORGIAN BAY EXPERIMENT STATION

J. G. Mitchell, of the Fruit Station at Clarksburg, in the Georgian Bay district, says: "Since last report the fruit situation has been somewhat changed. Apples are still growing well, and promise an abundant yield. So far the fruit is holding on well, the dropping being no more than necessary. We have been particularly free from insect enemies, but apple scab is now showing signs of development, and may cause considerable damage should wet weather continue very much longer. All things considered, there is prospect of more than average crop."

AN OFF YEAR IN PLUMS

THOUGH SOME LOCALITIES PROMISE A GOOD YIELD— OTHER FRUITS IN GENERAL TURNING OUT WELL

"Plums about Brighton," writes D. J. Nesbitt, "will be about one-third of a crop, and pears about half a crop."

T. H. Race, Mitchell: "The small fruit crop has been and is abundant. Strawberries have been very plentiful, but as few of them have been put down, the demand for other fruits for canning purposes will not be affected. Currants, gooseberries and raspberries are an abundant crop, and are likely to supply a large place in household consumption. Cherries are not a good crop, and the early ones now coming into the market are readily bought up. Plums are not going to be a heavy crop, though some varieties are bearing well. It seems to be an off year with the old standard, Lombard, as it did not blossom this season except with an occasional tree. I might observe here that I am discarding the Lombard from my collection, owing to the liability of the tree to black knot, and the fruit to rot, and am planting in its stead the Abundance and Burbank. These latter are bearing heavily this season. Pears were promising well for a time, but within the last few days a blight has struck some of the trees, and the black spot is beginning to show badly on the Flemish Beauty. Clapp's Favorite is promising well, but with all the later varieties the crop will be only a bare average."

C. L. Stephens, Orillia: "There will be about 20 per cent. of a plum crop, as compared with last season, the curculio has been pretty bad, but we are very free from aphis. Pears, not grown much, but I hear of several good bearings of Flemish Beauty, which so far are in good condition. Most grapes are only just now in

bloom, so that the prospect is very poor for ripe grapes in September."

A. Gifford, writing from Meaford. one of the greatest plum districts of the Province, says: "Plums will be a light crop, below last year in quality. Pears below the average, except Flemish Beauty, which so far promises well."

J. G. Mitchell, Clarksburg Fruit Station: "In plums the prospect is not so favorable as in apples. Some growers report very poor crops, others say their plums are nearly all falling off. This seems to be the case in orchards which have had poor care, while in orchards which have had good care and cultivation there is a full crop. On the whole I think the plum crop will be much below average, and in addition to this many acres of trees have been torn out and burned, the owners thinking it too much trouble to grow plums at the prices realized in late years."

A. E. Bellman, Bowmanville: "Plums have set well on some trees, and poorly on others; but I think, upon the whole, the yield will be considerably below last year. Pears seem a very good crop, but have dropped a good deal. Notwithstanding the dropping, they will be nearly as good as last year."

Murray Pettit, Winona: "The plum crop will be medium. The trees are healthy and no rot. Burbank and Bradshaw will be much heavier this year; Washington, Lombard, Yellow Egg, and Reine Claude lighter. Peaches a heavy crop. Bartlett pears will be a quarter crop, Flemish Beauty and Duchess an average, other varieties rather light. Grapes good."

John R. Walker, Cheapside: "We will not have over half the plum crop we had last year. Pears are a fair crop, but not up to last year by a third."

A. W. Peart, Burlington: "Plums are below an average, considerably short of last year. Pears, dwarfs, are average; standard varieties are below an average; peaches, above an average; grapes, an average crop; currants, red, below average; black, above an average; blackberries, above an average. Insects and fungi have done little damage yet to the apple. During the past few days, however, a leaf blight has developed on certain varieties of red currants, other varieties being entirely exempt from it."

IN NORTH SIMCOE

G. C. Caston, Craighurst Experimental Station: "Cherries are almost a total failure; plums, 25 per cent.; pears, fairly good. The curculio is getting in its work on what few plums there are. Frequent rains have prevented successful spraying this year."

UNITED STATES FRUIT PROSPECTS

Although the fruit prospects in the United States are not as good as they were a month ago, the indications are, says the Official Crop Reporter, issued by the United States Department of Agriculture, for better than average crops both in apples and peaches this season.

The Climate and Crop Bulletin, speaking on the same subject, says: "In Michigan, New York, and New England apples continue promising, and a further improvement is reported from Kansas and Oklahoma; elsewhere a very inferior crop is indicated. Except in Michigan, Tennessee and Arkansas, peaches are scarce."

IN WESTERN NEW YORK

Secretary Hall, of the Western New York Horticultural Society, has kept close watch of fruit conditions since the May frosts, and from correspondence with fruit growers over that section of the State finds many gratifying conditions. Apples never

looked nicer, being absolutely free from fungous disease.

TOMATOES ARE DOING WELL

The tomato crop, which may be included under the head of fruit, does not promise at all well. In fact, tomatoes never made a much poorer show than they are doing in Kent County this year. If what is seen in Kent is a fair indication of what is found elsewhere, tomatoes for canning will be a scarce article this season.

CHANGES IN VARIETY OF APPLES GROWN IN NOVA SCOTIA

BY

F. C. SEARS

PROF. OF HORTICULTURE, WOLFVILLE, N. S.

IN these days of the almost endless multiplication of new varieties of fruits, when every year sees the launching of new sorts which it would seem (from the introducers' descriptions) must displace altogether the old favorites, it is interesting to observe the changes taking place in the varieties of apples which are set in commercial orchards.

I have before me a report of the Nova Scotia Fruit Growers' Association of 1883 in which is given a descriptive list of the "nine principal kinds of apples grown in Nova Scotia," and it is stated that this list was prepared in 1880, so that over twenty years have elapsed since it was compiled. The list, which is the work of Mr. R. W. Starr, is as follows: Gravenstein, Ribston Pippin, Blenheim Pippin, King of Tompkins, Baldwin, Nonpariel, Northern Spy, Yellow Belleflower and Golden Russet. At a recent meeting of our Horticultural Club, on the same authority, the following list was selected as the "*ten* best commercial varieties" from Nova Scotia to-day—Gravenstein, Ribston Pippin, Blenheim Pippin, King of Tompkins, Golden Russet, Baldwin, Northern Spy, Stark, Fallawater and Nonpariel. In other words, after twenty-two years' experience Mr. Starr drops the Yellow Belleflower from the list and adds the Stark and the Fallawater. Truly this is not a great change for so long a time!

But when one comes to examine critically his revised list, which undoubtedly comes very close to being the ten most popular among Nova Scotia growers to-day, it is surprising how many of them have one or more serious defects viewed from the standpoint of the grower. Some of the most obvious are these:—The Gravenstein, though all that could be desired for quality and growth, comes so early that prices are low and the demand limited. The Ribston has a serious tendency to dry rot and is almost wholly a dessert apple, so that the market is limited. The Blenheim dry rots and the King is often a shy bearer and apt to be affected with "collar-rot." The Golden Russet is a very irregular bearer, with a few growers giving good and regular crops, but more often being a light, shy bearer. The Baldwin is, we believe, about as popular as any variety grown, though its tendency to overbear every other year and "under-bear" in between is against it. The Spy is all right except that it is too slow in coming into bearing, and the Stark is very popular just now but has not been grown very extensively, is not of high quality and

those who know it best say that it is seriously liable to a browning of the skin, akin to the dry-rot of the Ribston. The Fallawater is excellent in most respects but is very liable to attacks of "collar-rot," while the Nonpariel, though an ideal apple in many respects, is not of high quality and is developing, in the western end of the Annapolis Valley, a most alarming tendency to canker.

All this simply shows that the ideal varieties have not yet been produced, at least in great numbers, and while more knowledge may help us to overcome some of the defects mentioned, still we should welcome the present tendency to introduce new sorts and should hope great things from it.

Just now the Red Russet, which is said to be a cross between the Baldwin and the Roxbury Russet, is coming into favor wonderfully with those who know it. And like almost every other locality the Ben Davis has been largely planted in Nova Scotia of late and growers are still wondering whether this was wise or otherwise ; while Ontario, McIntosh Red, Gano, North Star and Ohio Nonpariel are varieties which are claiming more or less attention as new and promising sorts for general planting.

Altogether we cannot doubt that within the next twenty years we shall see a much greater change in this matter of varieties than has been witnessed in the last twenty, and we may reasonably hope that "the change will do us good."

NEW FRUITS

Mersereau Blackberry is highly eulogised on the circulars which have come to hand, emphasizing four cardinal points in its favor: great size, luscious flavor, great hardiness of canes and great productiveness. It is claimed that in quality it is exceptionally sweet, rich and luscious, without a core. A shortcake made of it is more delicious than that made from strawberries. The yield is enormous; the introducer declares that as much as 12,000 quarts per acre have been harvested.

The King Raspberry is said to be the earliest red variety, its fruit of the brightest crimson and of best quality, equalling in this respect the popular Cuthbert, than which it is a better shipper.

Peach, Duke of York.—Our early peaches are usually so small and rot so badly in ripening that many of our peach growers are quite discouraged with them. In consequence of this there are very few early varieties being planted. At the Royal Horticultural Society's show on May 20th a new variety was exhibited, which received the award of merit as a new variety of great promise. It is called the Duke of York, and is a cross between the Early Rivers nectarine and the Alexander peach. The flavor is excellent, and the fruit pretty and well colored, and of the largest size. It's season is the same as that of the Alexander peach.

HINTS TO ONTARIO FRUIT SHIPPERS

THE TASMANIAN APPLES—SOME SPECIAL VARIETIES—NONE EQUAL TO CANADIAN—LESSONS TO BE LEARNED IN PACKING

A LETTER FROM

A. McD. ALLAN

SUPT. OF FRUIT EXHIBIT FOR THE DOMINION AT WOLVERHAMPTON, ENG.

PROBABLY the most striking characteristic of the Tasmanian apple is the similarity of all the varieties, and the fact that all are alike firm in flesh, but devoid of juice and possessed of but little flavor. Doubtless the absence of juice accounts to a large extent for the fact of their carrying so well to distant markets. Some dealers inform me that it is a rare thing to find decayed or partially decayed specimens among the best kinds, especially in the early shipments. But in the second quality sometimes nearly half the contents of a box is worthless.

The box is made from hardwood and contains from thirty-eight to forty pounds of fruit, each sample wrapped in tissue, or soft light brown paper. There does not appear to be much, if any fungus spotting in them, but they wilt and become wrinkled in the skin and dry in flesh. Excepting a slight blush upon the cheek there is an absence of high color. They are of the pippin family, the yellow kinds with a slight blush being considered the best for dessert, and the hard, green kinds for cooking only. The highest quality variety is named "New York," size and color about equal to a good medium sized Yellow Bellflower, core large and open like that variety, but calyx closed and set in deep, smooth basin, stem short and thick, set in a smooth, open, deep basin. This variety has a fine aroma which would lead one to expect fine flavor, but it is quite disappointing in this respect. This and several other kinds are of the Ribston form, or rather between that and Chenango, while another class of varieties is flatter and does not average so large or heavy.

Storman Pippin, which is said to be the best of this latter class, is a fair representative of them all in form and color, and resembles New York in all but form. New York brings the highest price, from ten to to twelve shillings; Storman Pippin 8 to ten shillings; other named kinds, five to seven shillings. Tasmanians are now all in the market and will soon be in consumption just as French strawberries and cherries arrive. Canada has nothing to fear from Tasmanian apples, even if they come in direct competition. But we can learn a lesson in careful selecting and packing. I am convinced that it will pay our shippers to send all first-class samples in boxes, wrapping each specimen in tissue, and to send forward in cold storage, even if freight rate should be much higher in that way.

The shipper who does this, taking great care to select absolutely choice specimens, to adopt and register with a neat, appropriate brand, stencil the correct name of fruit and its grade as well as the name of shipper upon every box, will make a fancy price in any market here and create a demand for all that Canada can send in future years.

Many dealers complain of the bad packing, and indeed it would be hard to regain confidence in barrel packing, as the trade everywhere express strongly against it, although some do admit a change for the better lately. But even these strongly advise the use of the box.

FLORAL NOTES FOR AUGUST

HOW TO GROW FREESIAS—REPOTTING CALLA LILIES AND PELARGONIUMS—MAKING CUTTINGS OF GERANIUMS—RAISING PANSIES FOR NEXT YEAR—PRACTICAL HINTS

BY

WM. HUNT

O. A. C., GUELPH, ONT.

FREESIAS.—A few of these pretty little Cape bulbs should be started now for early winter flowering. Reserve some bulbs for later potting, so as to have a succession of their sweet-scented flowers from December to April. Plant five or six bulbs in a 4 or 5-in. pot. Very rich soil is not necessary, soil that geraniums will grow well in will suit freesias. Cover the tips of the bulbs so that they are almost a quarter of an inch under the surface of the soil. The top of the soil should be about half an inch from the rim of the pot to allow room for watering. Stand the pots outside where it is not too sunny, never allow them to dry out, and do not keep the soil soaked with water all the time. Let the pots stand outside until early in September, then remove them to the window or greenhouse. Place them in a cool part of the house, as the freesia dislikes forcing. Larger blooms, and more of them, are the results of letting freesias take their time in growing.

CALLA LILIES

These should now be repotted if they require it. Do not over-pot them. Too large a pot often means lots of leaves, but no lilies. Sometimes a top dressing is better than repotting. This is done by taking about an inch or so of the old top soil, and putting some good rich soil in its place. Keep the calla lilies outside in partial shade until there is danger of early frosts. Water well when once established in the pots.

Fig. 2365. Calla Lily.

PELARGONIUMS

These are often known as "Lady Washington" geraniums. August is a good time to cut the old plants well back. Cut the growth of the past season back to within an inch or so of its base. Water the plants very sparingly until the stems show signs of growth. When the young buds or growth is scarcely one-eighth of an inch long, the plants should be shaken out of the soil they are in. If too heavily rooted, which is not often the case, cut off the tips of the roots and repot the plants into a size smaller pot. Use two parts of good loamy potting soil, and one part of sharp, fine sand well mixed together. Water the plants once thoroughly, then withhold water until the soil shows signs of dryness. Place the pots outside in a shady position on some coal ashes or boards, the latter are to keep worms out of the pots. A shaded sash and frame is a good place for pelargoniums after repotting, until they are taken indoors. Repot the plants into pots one or two sizes larger in December. Use richer soil and less sand for potting them in at this time. The tips of the growth taken from the pelargoniums now will strike readily in sand in pots. The cuttings of these should have about five or six joints, unless the growth is hard, when shorter cuttings may be used.

GERANIUMS AND COLEUS

Cuttings of these should be taken now so as to get the plants established before winter sets in. Five or six cuttings put in sand in a 4-in. pot, and the pot plunged in the ground outside where the hot sun does not strike it, will suit geranium cuttings very well. Keep the sand moist, but not soddened with water.

PANSIES

If these are wanted for early spring flowering the seed should be sown now. Sow in a shallow box in fairly light soil. Place the box in a shaded place out of doors. When the plants are large enough to handle, plant them out in light, rich well drained soil in a shaded frame facing the south. A sash should be placed over them in very severe weather in winter, or the plants should have a light protection

Fig. 2366. Freesias in Greenhouse.

of brush and leaves from December to March, instead of the sash.

PETUNIAS AND VERBENAS

If you have a choice variety of these you wish to take up to save over winter, cut the plants well back now. As soon as young growth commences, take them up carefully when the soil is moist, and pot them into some good potting soil. Place the pots in the shade or in a frame with a shaded sash if you can Water sparingly for a time after the first watering.

BEGONIA RUBRA

AS A COVER TO THE BACK WALL OF A GREENHOUSE

BY

A. ALEXANDER

HAMILTON

WHEN my present conservatory was built about four years ago, I removed a plant of Begonia Rubra from an old greenhouse and planted it in a narrow border, about 18 inches wide, which run between the cement walk and the wall. The plant was about 6 feet high, and had but three stems or canes. The back wall was covered with wire netting to the height of 18 feet, and the whole width 21 feet.

At the end of the second year it had reached the top of the wall and had sent up about ten other canes as large as bamboo canes which were soon at the top, and with the laterals covered a space of more than 250 square feet. About two years ago all the old parts were cut out and the new canes laid in. It is now at this time covering about two-thirds of the entire wall space. From the day it was planted till now, nearly five years, it has been covered with its scarlet flowers in great abundance continuously.

FIG. 2367. BEGONIA RUBRA.

This shows what many common pot plants are capable of when given their liberty and fair conditions. The photo does not do justice to its appearance as it had to be taken at an angle.

FICUS ELASTICA

BY

WM. HUNT

THE Ficus elastica, or Rubber plant as it is commonly called, is without doubt one of the best and most enduring of decorative plants, either for the greenhouse or the more trying conditions that exist in a window or room of a dwelling house. Although its habit of growth is not as graceful as many well known house plants, such as palms, aspidistra, etc., the thick leathery leaves of this Ficus will often retain their bright glossy appearance for a much longer period than most varieties of house plants inclnding those just mentioned, even under more adverse treatment. The propagation of the rubber-plant is, however, the most difficult problem for the amateur plant grower to solve, in connection with its culture. Large plants have frequently to be cut back in order to secure a more shapely plant, or to keep its strong growing branches within reasonable bounds. It is seldom however, that the growth taken from an ill-shaped plant is successfully propagated. A description of some of the methods usually adopted by florists in the propagation of the Ficus will perhaps be acceptable to readers of the Horticulturist, who may perhaps have a plant that may require cutting back so as to make it more shapely and symmetrical looking. The pruning or cutting back does not injure the plant unless cut back too severely, as it soon breaks into into new growth again if not cut back too far into the old wood. Even in the latter case it is only a question of time before it starts into growth again.

Mossing Cuttings.—This method of mossing partially severed cuttings of the Ficus, is probably the best and surest method of propagation for the amateur to attempt. For the operation of mossing, a fairly strong and healthy branch or shoot should be selected. One or two of the leaves should first be cut away at the place selected for the base of the cutting. The selection of

FIG. 2368.
FICUS CUTTING SHOWING INCISION.

the part of the branch that is to form the base of the cutting is an important point toward being successful in the cutting taking root, as the wood must not be too old and hard, or too soft and pulpy. Usually, the wood is in a suitable condition about ten or twelve inches from the terminal point

FIG. 2369.
MOSSED FICUS CUTTING.

of the shoot or branch. After the removal of the leaves as before mentioned, an incision should be made on the underneath side with a sharp knife, as shown in the accompanying cut. The incision should be made in a slanting direction, running from the base of the cutting toward the tip, and from a half to three quarters of an inch in length, and should extend about two-thirds through the branch, leaving the remaining one-third of the branch uncut. The incision should terminate close under a leaf joint if possible. After the incision has been made a small thin piece of chip about one-sixteenth of an inch thick should be inserted at the termination of the cut. This is done to keep the incision open, so as to allow the thick sap to flow clear away from the incision, as otherwise it would congeal and prevent the cutting from callusing and rooting. The chip should be long enough to extend just through the cutting.

A small stick, or piece of wire should be tied along side of the cutting for a few inches above and below the incision, to keep the cutting in its proper position. Sufficient wet moss should then be wrapped around the cutting so as to cover the incision fully an inch thick after it has been bound tightly around. The wrapping of moss should extend about three inches above and below the incision, tapering gradually to each end, as shown in Fig. 2369. The moss should be bound tightly around the cutting with raffia or fine twine. Sphagnum moss is the best if it can be obtained, if not, ordinary green moss can be used. The bandage of moss should never be allowed to become dry, but should be kept quite moist by syringing or sprinkling with water once or twice every day. In about five or six weeks after the mossing process the cutting should be examined, when, if rooted, it can be severed entirely from the plant, as shown in Fig. 2370 and potted If not rooted the moss should be

FIG. 2370.
ROOTED FICUS CUTTING.

again put around the cutting as before described, and left for a week or two longer. If on examination the base of the cutting shows signs of decay instead of rooting, it should be severed entirely from the plant. In this case the cutting could then be shortened a joint or two at the base, and placed in a four inch pot filled with sharp sand. Place the pot in a shaded warm part of the green-house or window and keep the sand moist. A plant may possibly be obtained in this way.

The best time of the year for striking cuttings of the Ficus, whether by ordinary or moss cuttings, is during July and August. A warm, sheltered, and fairly well shaded position in the greenhouse or conservatory, is the best place for the plant to ensure success with this method of mossing cuttings. A greenhouse, however, is not absolutely necessary to be successful, as I have rooted cuttings by this method out of doors during the hot months of summer by standing the plants in a warm, well sheltered position.

In potting the cutting most of the moss should be first removed and the plant securely staked. The leaves should also be tied together fairly tight, so as to prevent the cutting from shifting about in the pot. Use light sandy soil for the first potting, and not too rich. Water the cutting rather sparingly until it has become well rooted in the pot, and keep it in a warm shaded place for a time. I have attempted to describe as clearly as possible the method of rooting cuttings by mossing them, some allowance, however, must be made as to depth and length of incision, length of cutting, etc., as these must of necessity vary a little according to the growth of the branch made use of.

Single Joint Cuttings.—These cuttings consist of a single joint with leaf attached. The best part of the branch to secure these cuttings from, is from a few joints above and below the part of the branch described as suitable for cuttings for mossing. Insert the cutting firmly in sharp sand, so that the base of the leaf and stem at the joint is just under the surface of the sand. A shallow box about two inches deep, well drained and filled with sand, will perhaps be better than pots for these cuttings, as they are less liable to be shifted about in the sand. These pots or boxes—as the case may be—of cuttings can be placed in a warm shaded part of the greenhouse, or in a frame that should

FIG. 2371.
FICUS CUTTING WITH "HEEL."

be covered closely with a sash thickly shaded, so as to exclude the direct rays of the sun. Careful watering so as to keep the sand always fairly moist is necessary to be successful with these cuttings. I have known cuttings of this kind to strike root successfully when the pots have been placed in a window. Single joint cuttings, how-

ever, must be taken in the hot weather if they are to be rooted successfully. The after treatment of the single joint cutting will be the same as recommended for the mossed cuttings.

Terminal Cuttings.—These cuttings and the method of taking them differs very little —except so far as the strong growth of the Ficus necessitates—from a geranium or almost any ordinary cutting or slip. The cutting may possibly be a little shorter than that recommended for mossing, especially if the growth of the cutting is short and close jointed. The leaves of these should be tied up fairly close together and inserted in sand, one in a three or four inch pot, and the cutting securely staked. The staking is a very necessary part of the operation, as the weight of the leaves may cause the cutting to move or shift about in the sand and thus prevent its rooting. The same position, etc., will suit these as recommended for single joint cuttings. Oftentimes short cuttings can be taken from the large branches of an old plant with what is known as a "heel" attached. This "heel" is simply a small piece of the stem, from which the cutting is growing taken off, with the cutting as shown in Fig. 2368. If these kind of cuttings can be obtained they will, as a rule, root more readily than the terminal or plain cuttings before mentioned. Terminal cuttings should be cut off near to and close below a leaf joint, as they strike more readily than if severed mid-way between the leaf joints.

I have recently had several letters from subscribers to the Horticulturist, asking for information respecting the propagation of the Ficus elastica, hence my reason for writing such a lengthy paper on this subject. I may, however, say in conclusion that the method of mossing cuttings as described for the Ficus, can be successfully applied to other plants, more especially to the tall and overgrown stems of Dracenas and Cordylines, that have a natural habit of becoming tall and unsightly looking as decorative plants.

FRUIT CROP NOTES

The Winnipeg papers are making the most of the report of the Fruit Inspector in the Northwest, who repeats the story that Ontario has been losing the trade of the Northwest on account of bad packing. We would like to hear something from the Ontario fruit growers on this Northwest trade.

Apple growers, in anticipation of a somewhat larger crop than usual, should provide ample storage. Boards of Trade and Fruit Growers' Associations can do no better work than encourage the building of farm and general storage houses and the establishment of evaporators.

House cellar storage is not usually very successful with apples. The fact is we want a cooler temperature than is usually obtained in a house cellar. A cellar under an out-door building that can be opened cold nights and closed during the day is much more successful.

Reports come from Nova Scotia that the unusually cool winds in May and June and the ravages of the Bud Moth will make the apple crop small in quantity and inferior in quality this year. J. W. Bigelow, of the Provincial Fruit Growers' Association estimates the Nova Scotia crop at 200,000 barrels for shipment.

CANADIAN MAPLES

TEN VARIETIES IN CANADA—CAREFUL DESCRIPTION WRITTEN FOR THE JOURNAL

BY

W. T. MACOUN

HORTICULTURIST CENTRAL EXPERIMENTAL FARM, OTTAWA, O T.

IF THERE is one Canadian tree which is known to young and old it is the maple. That patriotic song, "The Maple Leaf Forever," is one of the first which the little children learn to sing at school; and often it is sung in the refreshing shade of the maples on a hot June day, when the value of the maple as an ornamental shade tree is pointed out to the scholars by the teacher. Then, the maple sugar and syrup in the early spring impress the maple on the minds of Canadian youth more than perhaps anything else. Those of maturer years sing the same song, enjoy the same shade, and many also the sweets of the sugar maple. The latter also admire the form and foliage of the trees and the economical value of the wood for furniture and other purposes. The emblem of Canada is thus well and favorably known to young and old.

While almost everyone, from the little child upward, is familiar with the maple, comparatively few, especially in our cities and towns, can distinguish the common species from each other, and still fewer know all the species which are to be found in Canada. It is in the hope of making the different species better known that these notes are written.

There are ten native species of maples in Canada, all of which are perfectly hardy at Ottawa, with the exception of the Large-Leaved Maple (*Acer macrophyllum*) which kills outright, and the Vine Maple (*Acer circinatum*) which, although it becomes hardier from year to year, cannot be called more than half-hardy.

Six of the species grow to be large or medium sized trees, while four are but small trees or shrubs.

The technical descriptions given in this article are taken from the "Cyclopædia of American Horticulture," as they are simpler and more concise than those found in botanies; but the nomenclature is principally that used in the "Catalogue of Canadian Plants" (Macoun), which is most familiar to readers of the "Canadian Horticulturist." These changes have been made in the names, but both old and new are given. The illustrations are from photographs kindly furnished by Mr. F. T. Shutt.

1. **Sugar or Rock Maple** (*Acer saccharinum*, Wang; *Acer saccharum*, Marsh).—"Large tree, 120 feet, with bark; leaves 3-5 lobed, cordate, 3-6 inches long, with narrow and deep sinuses; lobes acuminate, sparingly dentate, usually glaucous and glabrous beneath; fruit with little spreading wings." It is found from Nova Scotia to the western end of Lake Superior, and in scattered places to the Lake of the Woods and northward to Lake St. John, Lake Temiscamingue, and to the Long Portage on the Michipicotin River, north of Lake Superior. It is the most valuable and one of the most beautiful of all Canadian maples. It is one of our best timber trees, the wood being highly esteemed for many purposes. Being hard and tough, it is used where strength is required, as for axles of wagons, handles of

FIG. 2372. SUGAR MAPLE.

tools, etc., and on account of its fine grain and the fact of its taking a good polish it is much utilized in furniture making, the well-known Bird's-Eye Maple being obtained from this species. As fire wood, the Hard Maple has few equals, and many a log has warmed Canadian homes on wintry nights. The sap of the Sugar Maple gives it a unique place among Canadian trees, for although other trees yield sap which may be converted into syrup or sugar, there are none which produce it which equals the Sugar Maple in richness and palatability. Sugar making is quite an important and profitable industry in some parts of Ontario and Quebec, and the supply of pure syrup and sugar never seems to equal the demand. The continued tapping of the trees does not appear to lessen the vigor of them, and trees which have yielded many a quart of sap live through several generations of tappers. It is as a shade tree, however, and on account of its brilliantly colored foliage in autumn, that the Sugar Maple is best known to those living in cities, towns and villages. For street purposes it stands without an equal, being of fine shape, dense foliage, comparatively free from insect pests and fungous diseases, and long lived. In October the foliage of this species and the Red Maple assume those varied, delicate, and gorgeous tints which help to give such character to our forests, brightens up our city streets, and gives autumn a gayness which the falling leaf alone dispels.

The Sugar Maple thrives on almost all kinds of well drained soil, but makes little growth where the ground is constantly wet and cold.

2. **Black Maple** (*Acer nigrum*, Michx; *Acer saccharinum nigrum*, Torr & Gray).—"Large tree, 120 feet, with black bark; leaves cordate, with sinus mostly closed, generally 3-lobed, with broad sinuses, the sides of the blade mostly drooping, green and pubescent beneath; lobes acute, entire or obtusely toothed; fruit with diverging wings."

For a long time this was regarded as merely a variety of the Sugar Maple, but it now ranks as a distinct species, and rightly so, for it has quite a different appearance from the former, and is fairly well distributed throughout Ontario, from Ottawa westward. It is not as attractive a tree as the Sugar Maple, the foliage being much duller, but it makes a striking object, as the leaves differ so much from the other large maples, the lobes being almost or quite entire. The wood of this tree ranks next to the Sugar Maple in quality. This tree also yields sweet sap, but is not used in sugar making to any extent.

3. **Red, Scarlet, or Soft Maple** (*Acer rubrum*, Linn).—"Large tree, 120 feet; leaves 3-5 lobed, 3-4 inches long, green above, pale or glaucous beneath; lobes unequally and crenately serrate; flowers red or scarlet, rarely yellowish; petals 5; fruit glabrous."

The range of this maple in Canada is from the Atlantic Ocean west to the Rainy River and a little further north than the Sugar Maple.

The Red Maple is not as useful a tree as the Sugar Maple. Although a prominent Canadian tree, its value for timber, fuel and sugar being not nearly equal to the other, but it is quite, if not more, ornamental. Beginning in the early spring before the leaves make their appearance, the scarlet blossoms, which are so profusely borne, brighten our streets at a time when they are much appreciated, and in the month of June the bright red fruit continues to make this tree attractive. It is, however, in the autumn that it shows to best advantage, when the leaves take on the bright scarlet and lighter hues which make the maples famous. Odd trees will be found assuming bright tints early in the autumn, and the contrast between these and the deep green of the surrounding foliage is very marked.

Where the soil is suitable, the Red Maple makes quite as good a tree for streets and parks as the Sugar Maple, but often it is planted in ground where it will not thrive and it dies before reaching its prime. This tree, unlike the Sugar Maple, does best in wet soil, and is found in the wild state in swampy land or bordering lakes and rivers, being often called the Swamp Maple. Large numbers of the Red Maple are planted as shade trees in our cities and towns, and where the soil is moist they succeed well, but if the soil is naturally somewhat dry and becomes dryer where permanent walks and roadways prevent air and moisture reaching the roots of the trees, they gradually sicken and die. Many such trees may be seen in the City of Ottawa to-day.

4. **Silver or White Maple** (*Acer dasycarpum*, Erhr ; *Acer saccharinum*, Linn.— "Large tree, 120 feet ; leaves deeply 5-lobed to 5-cleft, 4-6 inches long, green above, silvery-white beneath ; lobes deeply and doubly serrate ; flowers greenish-yellow, apetalous ; fruit pubescent when young."

The Silver Maple is not as well distributed as either of the preceding species. It is

FIG. 2373. SMOOTH MAPLE.
(*Acer glabrum*, TORR.)

found in New Brunswick in a few places, and is quite rare in the Province of Quebec, but is abundant in the Province of Ontario. It appears to succeed further north than either the Sugar Maple or Red Maple, a few specimens planted near the Canadian Pacific Railway at Portage la Prairie, Man., being quite hardy. It has also been planted at Brandon, Man., and although not perfectly hardy does not always kill outright.

This tree is less valuable than the Red Maple for timber or fuel, being very soft ; nor does it color as highly in the autumn as either the Red or Sugar Maple, but it is a more graceful tree than either of the others, being of more spreading habit and having more finely cut foliage. Like the Red Maple, this species thrives best in moist ground, and where the conditions are favorable attains a great size. It is a very rapid growing species, and on this account is often planted in preference to other kinds.

The Silver Maple blooms earlier than the

Red Maple, but the flowers are not so attractive. The fruit, which is of large size, ripens about the middle of June, at Ottawa, and is very noticeable when lying on the footpath. There is a well known cut-leaved pendulous variety called Wieri which is a very graceful tree.

5. **Large-Leaved Maple** (*Acer macrophyllum*, Pursh).—"Tree 100 feet high; leaves cordate, deeply 3-5 lobed or cleft, pubescent when young, pale green beneath, 8-12 inches across, middle lobe mostly 3-lobed; racemes pendulous; fruit with yellow, bristly hairs, largely winged."

The Large-Leaved Maple is confined to the Province of British Columbia, and is only found there in the valleys along the coast in the southern part of the province and on Vancouver Island. It is a majestic tree, and reaches a great size in favored spots in British Columbia. The leaves are of great size, often measuring a foot in diameter, which distinguishes this maple very readily from other Canadian species. Unfortunately, it winter kills at Ottawa. Nor do I know where there is a large specimen growing in Canada outside of British Columbia. The leaf in the illustration is a very small one, but gives an idea of its shape.

6. **Ash-Leaved Maple, Box Elder** (*Acer Negundo*, Linn; *Negundo aceroides*, Moench.—"Large tree, 70 feet; leaves pinnate; leaflets 3-5, ovate or oblong lanceolate, coarsely serrate or 3-lobed, mostly glabrous, 3-5 inches long; flowers before the leaves; staminate flowers in pendulous corymbs, pistillate flowers in pendulous racemes."

FIG. 2374.

1. *Acer saccharinum*, Wang. 2. *A. nigrum*, Michx. 3. *A. rubrum*, Linn. 4. *A. dasycarpum*, Ehrh. 5. *A. macrophyllum*, Pursh. 6. *A. negundo*, Linn. 7. *A. pennsylvanicum*, Linn. 8. *A. spicatum*, Lam. 9. *A. glabrum*, Torr. 10. *A. circinatum*, Pursh.

A separate genus was formerly made of this tree and it was called *Negundo aceroides*, but in recent years it has been included with the maples. The Box Elder is not found in a wild state in the Maritime Provinces and in the Province of Quebec. In Ontario large trees have been found in the valley of the Humber, near Toronto, and near Chatham, which were thought not to have been

FIG. 2375. FLOWERS OF SUGAR MAPLE.
Acer saccharinum, Wang.

introduced ; but apart from these two localities, it is not found wild in the writer's knowledge elsewhere in the province east of the Kaministiqua River, which is west of Lake Superior. It becomes more abundant westward, and is very common in Manitoba and the Northwest Territories. On account of its very rapid growth and ease of culture, this tree is often planted in Ontario for shade and ornamental purposes. It, however, usually proves very unsatisfactory, being unshapely and breaking down easily. The fruit also remains on the female trees during winter, making them quite unsightly. In Manitoba and the Northwest Territories, however, this tree has great value. It is a veritable ironclad and withstands the severest winters. It grows to be a handsome and shapely tree on the prairies, and is very useful for shade, for windbreaks, for firewood, and for other purposes. What the Sugar Maple is to Ontario, the Box Elder is to Manitoba and the Northwest Territories. The male and female flowers of this maple are borne on different trees.

7. **Striped Maple** (*Acer Pennsylvanicum*, Linn).—"Tree rarely 40 feet ; bark greenish, striped with white lines ; leaves slightly cordate, roundish obovate, 3-lobed at the apex, 6-8 inches long, finely serrate, ferrugineously pubescent beneath when young ; racemes glabrous, drooping."

The Striped Maple is common in Nova Scotia, New Brunswick, Quebec, and in Ontario as far as Lake Superior. It is a very handsome little upright tree, with large attractive foliage and curiously striped bark, the stripes being well defined and very noticeable. The flowers, which are yellowish green, are borne in pendulous racemes and add to the attractiveness of the tree. This maple delights in cool, shady woods, and does not thrive in the open as well as most of the other species. The leaves are not highly colored in autumn, but become a pleasing yellow.

8. **Mountain Maple** (*Acer spicatum*, Lam).—"Shrub or small tree, rarely 30 feet ; leaves 3 or slightly 5-lobed, coarsely serrate, pubescent beneath, 2½ to 4½ inches long ; racemes rather dense, long, upright ; fruit with diverging wings, bright red in summer."

This is a very common maple in damp or wet woods from Nova Scotia to the northern part of Manitoba and as far north as York Factory along the Hudson Bay. In the east it is little more than a shrub, but in northern Manitoba it becomes a small tree. As this species grows more in the open woods than the Striped Maple it usually succeeds better in cultivation. It has its own good points and is well worthy of a place in the ornamental grounds. It blooms during the month of June, and the flowers are followed by bright red fruit which makes the tree quite attractive ; the leaves, also, are more or less highly colored in autumn.

9. **Smooth Maple** (*Acer glabrum*, Torr).—"Shrub or small tree, 25 feet, quite glabrous ; petioles bright red ; leaves deeply 3-5

lobed or 3-parted, 1-5 inches across, dark green and shining above, pale or glaucous beneath ; lobes doubly serrate." .

This is a western species and grows wild from Vancouver Island eastward to Banff, in the Rocky Mountains. It has succeeded remarkably well at Ottawa and has proven quite ornamental, the red petioles of the leaves and the red branches contrasting well with the glossy green foliage. The largest specimen at the Experimental Farm is about twelve feet high and twelve or thirteen feet across. It is asserted that there are two species in what was formerly regarded as one, and that the form found along the western coast is quite a distinct species from that growing in the mountains. If this division is made we shall have eleven species in Canada instead of ten.

10. **Vine Maple** (*Acer circinatum*, Pursh).—" Small tree, rarely 40 feet ; petioles and peduncles glabrous ; leaves 7-9 lobed, 2-7 inches across, glabrous ; lobes acute, doubly serrate ; flowers in drooping corymbs with purple sepals."

The beautiful little Vine Maple has quite a limited range in Canada, being confined to Vancouver Island and to the valleys near the coast along the mainland of British Columbia. The leaves of the Vine Maple are paler green than the other species, which gives them a more delicate appearance. They are somewhat similar to the Japanese *Acer palmatum*, and it is possible that the two were originally derived from the same species. The handsome flowers, fruit and leaves, and the graceful appearance of this maple, make it very desirable for ornamental purposes where it will succeed. At Ottawa it is only half hardy, though one specimen has now been nearly hardy since 1897.

FIG. 2376. VIEW IN HON. WILLIAM GIBSON'S GREENHOUSE.

Inverugie is the county seat of the Hon. William Gibson, and is yearly becoming of more interest to the student of horticulture. Mr. Thomas Robertson is gardener, having had eight years' experience in England and fifteen with Mr. James Goldie, of Guelph.

A new greenhouse 24 x 24 feet, attached to the house, was finished in January, 1902, and we give a snap of some plants in one corner. The geranium is remarkably fine, one truss measuring 32 inches in circumference.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

Question Drawer

Poison Ivy.

1300. SIR,—Could you tell me, through the columns of your valuable paper, how to get rid of Poison Ivy? Is there any spray that would kill it.

It is all around the fences on one side of my place, and I cannot get at it to plow it down without removing the fences, and I am told that plowing is not very effective.

C. DAVIS, Toronto.

As far as I am aware, there is no method by which poison Ivy can be completely destroyed by means of spraying. The leaves and parts above the ground might be killed by spraying with some strong acid, but this would not seriously injure the creeping stems below the ground. The only satisfactory way to rid the ground of this troublesome plant is by digging or plowing it, and raking or harrowing of all of the broken stems. Those who are at all subject to the effects of this poisonous plant should not attempt this work without first protecting the hands by the use of leather mits.

O. A. C., Guelph. H. L. HUTT.

A New Cherry.

1301. SIR:—Please name the enclosed cherries. I want to buy some more trees of the variety for planting next spring.

Almira. D. B. HOOVER.

The samples much resemble Plymouth Rock, a variety which we have just finished gathering, (July 21st.,) This in our opinion is one of the best late sweet cherries in our collection, and it is marvellously productive, and of a very pleasant flavor.

Open Letters

BOULEVARDS VERSUS PRIVATE GARDENS

A LETTER FROM

W. F. CLARKE, GUELPH

FAMILIARLY KNOWN FROM CONTRIBUTIONS TO THE MONTREAL WITNESS
UNDER THE NOM DE PLUME OF "LINDENBANK"

SIR,—I have been an advocate of the boulevard system of improving town and city lots in preference to the custom of having division fences, of all sorts and sizes, as a means of securing privacy and safeguarding the contents of the private garden. But I cannot shut my eyes to one very strong incidental objection to the boulevard plan, and that is the fact, for such it really is, as things now are, that it really means the extinction of the private garden. Not boys merely, but grown-up men and women, appear to think that the absence of a fence is a license to roam at will, and that a fence only is a notice to quit trespassing. Gradually we find, here in Guelph, where I live, that gardens are becoming more rare, and while it is quite true that grass and trees are "things of beauty" and "joys forever," no one can pretend that they may wholly supplant the garden with its varied attractions. It strikes me very forcibly that we need some legal protection to guard boulevards from trespass, but still more we need the protection of a better public sentiment in regard to the rights of owners of property, whether it is protected by a fence or by any other intimation of ownership. History tells us that in King Alfred's days people were so honest that jewelled bracelets and other valuable ornaments might be safely left hanging on trees and nobody but the rightful owners would ever think of touching them. If such things were left thus exposed in these days there would be a perfect scramble for possession of them.

I have a fence around my place yet in the delusive hope of being able to protect flowers and fruit, but I strongly suspect that the boulevard system has had much to do with the prevalence of that loose public sentiment which appears to make many people think they have a right to go wherever there is free passage, and to take whatever they have a fancy for. In my young days it used to be a school maxim and copy headline: "Who steals a pin it is a sin." Is this doctrine taught in our public schools to-day? Garden thieves and trespassers must be taught a few sharp lessons by police magistrates, and even parents must get some schooling in regard to the morals and manners of their children on these points if we are to see any marked improvement.

Guelph, July 1, 1902.

CABBAGES

HOW TO GROW TWO CROPS IN ONE SEASON

BY

S. H. MITCHELL

ST. MARYS, ONT.

SOME years ago I discovered a process by whcih two crops of good cabbage can be grown successfully on the same land and from the same plants in one season. As it has not been published heretofore, I contribute it for the readers of the Horticulturist.

The first crop must be early. Have the ground rich and well prepared; use good, well hardened plants from the middle up to the end of April, according to the season. Set not closer than thirty inches apart each way, so that it will give room for cultivation, hoe often, the oftener the ground is stirred the sooner the crop will mature. It should be cut from the first to the middle of July. Cut the heads carefully, as soon as ready, leaving the stumps as long as possible. Now continue to cultivate the ground often and moderately deep. The large leaves will shade the ground and the stumps from the sun. A new growth will rapidly appear all around the stumps, and the old leaves will drop off.

When the largest shoots are three or four inches long, with a sharp knife cut off all the shoots exceet the strongest one; cut close to the stump but do not cut into it, keep off all shoots that may appear, except the one for the head.

If your ground is good and rich, you will get a good head on each stump, eight or ten pounds weight, and of the best quality for fall or winter use.

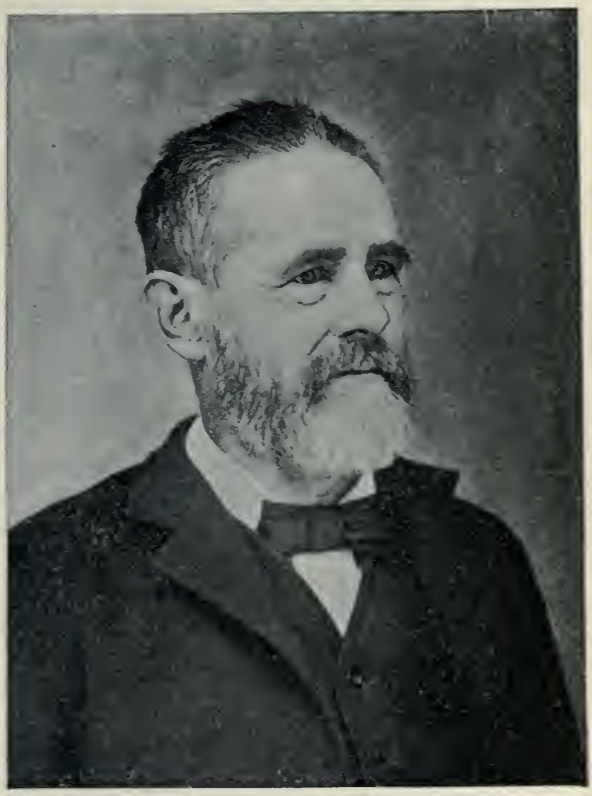

FIG. 1111. DR. T. H. HOSKINS,

of Newport, Vt., who has frequently contributed to this Journal interesting notes on Hardy Apples, passed away June 26th.

Notes from the Horticultural Societies

Grimsby.—One of the pleasantest gatherings yet held by the Grimsby Horticultural Society was a Rose Show, held on the lawn of Mr. Ambrose Pettit on Tuesday evening, June 8th. The principal attraction was a hedge of Crimson Rambler roses a quarter of a mile in length, extending along the carriage drive from the road to the house. They were trained upon a wire fence, and were now about three years planted. Every plant was a marvel to behold, with its enormous load of great trusses of gorgeous blooms, their deep crimson color enriched, at the time of our visit, by the direct rays of the setting sun. We estimated at least 5,000 roses on each plant, or a total, on the hundred plants, of over half a million. Several delegates from the Hamilton Horticultural Society who came down on the evening trolley, said they had never seen anything anywhere to equal this Crimson Rambler hedge, and that it was worth a journey of one hundred miles fo see.

A table of roses and other cut flowers was displayed on the verandah, and a brief program of music and recitations as the twilight changed to darkness, concluded the delightful evening party.

FRUIT PRIZE LISTS

A REVISION of Fruit Lists is most urgently needed for the reasons which were well set forth by Prof. Hutt, O. A. C., Guelph, at the recent meeting of the Canadian Association of Fairs and Exhibitions, in Toronto, whose paper we published on page 98.

Any one who reads over the lists of varieties for which prizes are offered at the various fairs, both small and large, will see that they are made with reference to varieties grown, and without any reference to varieties most profitable or best adapted to the section concerned. The planting of many varieties which are useless and unprofitable is thus encouraged. Besides this, we find that we are growing altogether too many varieties of fruit. What we need is to know and recognize the best variety of its season for market and the best for home uses, and then to plant accordingly. In making a shipment of apples to a distant market, a car of one straight variety can be easier sold and at a higher price than if it consist of several varieties. So in planting a commercial orchard we should bear this point in mind.

With these considerations in view, a committee of the Ontario Fruit Growers' Association, consisting of Messrs. W. H. Bunting, of St. Catharines; Prof. H. L. Hutt, of the O. A. C., Guelph, and L. Woolverton, of Grimsby, met together and prepared the following preliminary list of fruits as a basis for the preparation of a fruit prize list for township and county fairs in Ontario. Of course each section must decide for itself whether to choose the list recommended for the northern or southern sections or whether a combination from both lists. The committee will gladly receive criticisms from the readers of this Journal.

CLASS I—APPLES.

Five specimens of each variety.

For Southern Sections.

(*a*) COMMERCIAL VARIETIES.

SEC.
1. Baldwin.
2. Ben Davis.
3. Blenheim.
4. Cranberry.
5. Duchess.
6. Greening.
7. Gravenstein.
8. Hubbardston.
9. King.
10. Ontario.
11. Spy.
12. Wealthy.
13. Any other named variety.

(*b*) DOMESTIC VARIETIES.

SEC.
1. Chenango.
2. Duchess.
3. Fameuse.
4. Greening.
5. Gravenstein.
6. Jonathan.
7. King.
8. Primate.
9. Ribston.
10. Swazie.
11. Spy.
12. Wealthy.
13. Any other named variety.
14. Seedling variety.

(*c*) COLLECTIONS.

15. Best collection of 5 above named varieties for export.
16. Best collection of 5 above named varieties for dessert.
17. Best collection of 5 above named varieties for cooking.

(*d*) CRAB APPLES.

Twelve specimens of each variety.

SEC.
18. Hyslop.
19. Transcendent.
20. Whitney.
21. Any other named variety.

For Northern Sections.

(*a*) COMMERCIAL AND DOMESTIC VARIETIES.

SEC.
1. Alexander.
2. Duchess.
7. McIntosh.
8. Scott's winter.

3. Fameuse.
4. Golden Russet.
5. Hibernal.
6. Longfield.
9. St. Lawrence.
10. Transparent.
11. Wealthy.
12. Wolf River.
13. Any other named variety.
14. Seedling variety.

(*b*) COLLECTIONS.

15. Best collection of 5 above named varieties for export.
16. Best collection of 5 above named varieties for dessert.
17. Best collection of 5 above named varieties for cooking.

(*c*) CRAB APPLES.

Twelve specimens of each variety.

18. Hyslop.
19. Transcendent.
20. Whitney.
21. Any other named variety.

CLASS II—GRAPES.

Three bunches of each variety.

(For Southern Sections).

SEC.
1. Agawam.
2. Brighton.
3. Campbell.
4. Concord.
5. Delaware.
6. Diamond.
7. Lindley.
8. Moore.
9. Niagara.
10. Vergennes.
11. Wilder.
12. Worden.
13. Any other named variety.
14. Seedling variety.
15. Best collection of 5 varieties.

(For Northern Sections).

SEC.
1. Campbell.
2. Lindley.
3. Lady.
4. Moore.
5. Moyer.
6. Worden.
7. Any other named variety.
8. Best collection of three varieties.

CLASS III—PEACHES.

Five specimens of each variety.

SEC.
1. Alexander.
2. Champion.
3. Early Crawford.
4. Elberta.
5. Garfield.
6. Ingold.
7. Old Mixon.
8. Salway.
9. Smock.
10. Steven.
11. St. John.
12. Triumph.
13. Any other white flesh variety.
14. Any other yellow flesh variety.
15. Seedling variety.
16. Best collection of 5 varieties.

CLASS IV—PEARS.

Five specimens of each variety for Southern Section.

(*a*) COMMERCIAL VARIETIES.

SEC.
1. Anjou.
2. Bartlett.
3. Bosc.
4. Clairgeau.
5. Clapp.
6. Duchess.
7. Dempsey.
8. Giffard.
9. Goodale.
10. Howell.
11. Keiffer.
12. Louise.
13. Any other named variety.

(*b*) DOMESTIC VARIETIES.

SEC.
1. Anjou.
2. Bartlett.
3. Bosc.
4. Clapp.
5. Duchess.
6. Flemish Beauty.
7. Lawrence.
8. Marguerite.
9. Rosteizer.
10. Seckel.
11. Sheldon.
12. Wilder.
13. Any other named variety.
14. Seedling variety.
15. Best collection of 5 commercial varieties.
16. Best collection of 5 domestic varieties.

(For Northern Section).

SEC.
1. Anjou.
2. Clapp.
3. Flemish Beauty.

CLASS V—PLUMS.

Twelve of each variety.

(For Southern Sections).

(*a*) EUROPEAN PLUMS.

SEC.
1. Bradshaw.
2. German Prune.
3. Glass.
4. Coe.
5. Gueii.
6. Lombard.
7. Purple Egg.
8. Pond.
9. Reine Claude.
10. Smith's Orleans.
11. Washington.
12. Yellow Egg.
13. Any other named yellow variety.
14. " " dark "
15. Seedling variety.
16. Best collection of 5 above named varieties.

(*b*) JAPAN PLUMS.

SEC.
17. Abundance.
18. Burbank.
19. Red June.
20. Any other variety.
21. Best collection of three varieties.

(For Northern Sections).

(*c*) AMERICAN PLUMS.

SEC.
1. Aitkin.
2. American Eagle.
3. Bixby.
4. Cheney.

SEC.
9. New Ulm.
10. Silas Wilson.
11. Wolf.
12. Wyant.

5. City.
6. De Soto
7. Gaylord.
8. Hawkeye.

13. Any other variety.
14. Seedling variety.
15. Best collection of 5 varieties.

CLASS VI—**QUINCES.**

SEC.
1. Orange.

SEC.
2. Any other variety.

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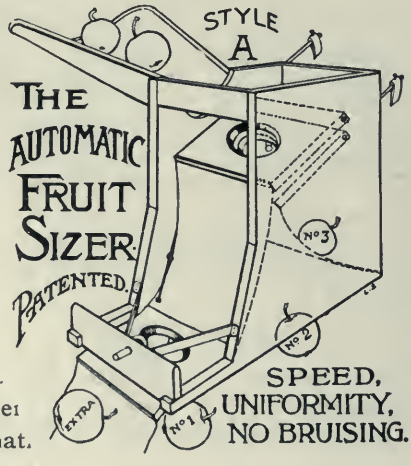

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Fig. 2378. Bradshaw Plum.

THE
CANADIAN HORTICULTURIST

SEPTEMBER, 1902

VOLUME XXV NUMBER 9

BRADSHAW PLUM

(NIAGARA, BLUE IMPERIAL.)

CONSIDERED by many one of the most valuable of the European varieties, whether for home use or market, because of its fine quality, its large size and beautiful appearance.

Tree.—Erect, vigorous, very productive, somewhat subject to black knot.

Fruit.—Large, 2¼ x 1⅞; stalk one inch long, slightly curved; color, reddish purple, with blue bloom, apex round, slightly depressed; suture on one side, broad and shallow.

Flesh.—Color, yellowish, juicy, tender; flavor, rich and sweet; pit, long thin oval, 1¼ x ⅞, partial cling.

Quality.—Dessert, very good; cooking very good.

Value.—Near markets; first-class.

Season.—August 15th to 30th.

Notes and Comments

PLUM GROWING IN ONTARIO

A GREAT advance in plum growing has been made in Ontario during the last twenty years. Before that fruit growing had scarcely developed into a special line of agriculture, and plums especially were neglected because it was generally supposed that the curculio would take them all, as it already did the fruit of the few trees of the garden. But by and by it was found possible to grow the plum in such a quantity as to feed both man and curculio, until now some growers even count this insect a friendly helper in thinning the crop.

Encouraged in this way large orchards have of late been planted in many parts of Ontario, especially along the southern shore of the Georgian Bay, and the north shore of Lake Erie and the shore bordering the head of Lake Ontario.

THE EUROPEAN PLUMS

FOR excellence of quality no class of plums can be compared to the European or Domestica class. For hundreds of

years these plums have been grown and improved under special cultivation and selection by the gardeners of Europe and Asia, and where these succeed as they do in the southern parts of this Province, there is no reason why they should not be planted freely for commercial purposes. For convenience sake they have been divided into several subclasses, as for example: (1) The Gages, roundish plums, green or yellow in color, with green flesh, including Reine Claude, Green and Imperial Gage, Washington and General Hand; (2) the Prunes, oval plums, blue purple in color and rather firm, greenish yellow flesh, including the German Prunes and Prune d' Agen; (3) the blue plums with large oval fruit, dark blue in color, with firm yellow flesh, including such varieties as Kingston, Quackenbos, Shipper and Arctic; and (4) the Red plums, of which the fruit is obovate, purplish with thin skin and soft juicy flesh, as Bradshaw, Victoria, Pond, Duane and Lombard.

Of course the above distinctions are more or less arbitrary, for, in these days of cross breeding, classes are being more and more obliterated and individuality alone seems to remain for study. For the home garden a large assortment of these plums is most interesting and desirable, but for the commercial orchard it is best to make the list as limited as possible and to plant only three or four of the very best varieties. The time to decide upon what varieties are most profitable for one to grow is just now in plum season when the fruit is being harvested and sold.

PICKING AND MARKET PLUMS

PLUMS need to be handled a little on the green side, especially the "Red Plums," such as Bradshaw, which quickly become too ripe to ship, and indeed they cannot well be sent to very distant markets. The Prunes are much better shippers, and this class of plums is being forwarded by steamer from Collingwood for distribution to towns on the north shore of Lake Huron and points farther west.

Plums in Ontario have usually been packed in a basket containing eleven quarts, but since new sizes have been introduced this basket will be discarded for one holding twelve imperial quarts, which is rather large for plums. A very suitable standard sized basket for choice plums is the 6⅔ quart basket, which also holds about nine pounds, and will soon become a favorite basket for all kinds of choice tender fruit in our markets.

TOO MANY VARIETIES OF PLUMS GROWN

IT IS an old saying, that you should not put out all your eggs in one basket, for an accident might cause the loss of all, and no doubt this applies to plums as well as to eggs; and yet the more common mistake is the planting of too many varieties. Not knowing anything about them the young planter is guided almost entirely by the agent or by the nurseryman's catalogue, from which it would seem desirable to plant the whole list, for all of them are lauded most highly. Just here the work of our fruit stations comes in, to determine the varieties best suited to each section for home use and for market, and the reports from the experimenters will prove more valuable each year.

Mr. L. L. Hagar has 2800 bearing plum trees, and has planted such varieties as Washington, Bradshaw, Yellow Egg, Quackenbos, Reine Claude, etc. The first two varieties have been favorites with him, but this year the Washington nearly all dropped off. The Bradshaws were too full, and needed thinning by nearly one-half. On the whole, the Bradshaw has been a favorite variety for profit in Mr. Hagar's orchard.

"My principal varieties for profit are Bradshaw, Reine Claude, Quackenbos, and Gueii," said Mr. Albert Smith, "and these

are all overloaded with fruit this season. The Yellow Egg would be a favorite were it not so much inclined to rot. The Washington is another fine plum, but it is a little tender for shipment."

"I would not place Bradshaw at the head of the list for profit," said Mr. Ira VanDuzer, an experienced Winona fruit grower. "I find it too early for canning purposes—people are not quite ready for putting up plums by the middle of August. The variety which I find most in demand and which I would plant with the most confidence, is the Reine Claude. It is the favorite plum for canning, and indeed no plum equals it in quality for this purpose. It is in great favor and yearly gaining ground; it commands a good price, and is equal to Bradshaw in productiveness, if it does not excel that excellent variety.

SAND VS. CLAY SOIL FOR FRUIT

AN erroneous notion prevails that clay soil is not suitable for fruit culture, whereas the experience of many is quite in favor of clay soil, if not too stiff for cultivation, At "Maplehurst" we have tried both soils for apples, and have taken the largest and finest fruit off clay loam where well cultivated. This latter condition is of course perfectly essential, with such soil, otherwise the very worst results will follow. The lazy farmer had better plant on sand, which may endure neglect, but the industrious cultivator will value his heavier soil for many fruits. Our vineyard at "Maplehurst" is on a deep, rich sandy loam, and produces good crops of Concord grapes, but Mr. F. G. H. Pattison has his vineyard on clay soil, and always surprises us by marketing his Concords a week or so in advance of us, and declares his are sweeter in flavor as well as earlier in season.

Writers on horticulture have always advised planting the cherry on sandy soil, but as stated on page 312, Mr. W. M. Orr, of Winona, finds his cherry trees on clay loam longer lived and more productive than those planted on sandy loam.

"My Washington trees on sandy soil," said Mr. Albert Smith, "are all dropping all their fruit this year, but those on the clay are holding it very well. We always thought our farm too heavy for fruit growing, but recently we have found that we can produce as good fruit as any one by giving good cultivation. The soil of that plum orchard has received the best of tillage, and yet it has not been plowed for three years; the work is done with the disc and cultivator.

CHERRIES ON CLAY SOIL

THE objection to a rich, deep sandy loam for the cherry lies in its encouraging too great wood growth, which robs the fruit buds of their vigor. We have the Windsor cherry planted on such soil, and our experience has been unfavorable. The trees grow most vigorously, but the fruitage is only moderate, and the cherries seem almost as much inclined to rot as the Napoleon. We harvested our crop before it was fully ripe to save it from rotting, and a week later, about July 25th, Mr. Albert Smith was only beginning to harvest his Elkhorn and Windsor. His orchard was on clay soil; the trees were not half as vigorous in wood growth as ours, but the yield per foot of bearing wood was fully double. Indeed, the productiveness of his trees was enormous, and still more noticeable was the freedom from rot. What else could it be but the difference in soil? Not only were his cherries a heavier crop, but by hanging a week longer they were very much larger and better colored, which gave him a great advantage in selling price for his fruit.

WET SOIL WILL NOT DO

One caution must, however, be observed, whether sandy or clay soil be chosen, and

that is, it must be dry. Standing water about the roots of cherry trees will certainly stunt or else wholly destroy them, and for this reason many writers advise planting sweet cherry trees only on elevated, light, dry soils.

GOOD VARIETIES OF PEARS FOR EXPORT

OF the early varieties of Canadian pears the Clapp's Favorite and the Bartlett are the best, but the latter is sent forward with much the greater risk, because it ripens so rapidly, and unless all the cold storage is perfect from start to finish, they are almost sure to arrive in an over-ripe condition. The Clapp's Favorite is such a beautiful appearing pear, so large in size, and, if gathered at the proper season, so good in flavor, that it seems well adapted for early export. Prof. Robertson, in speaking of Clapp's Favorite in the same report, said: "I would like to read you one other brief reference from The North of England Brokers, Limited, of Manchester: The quality of those you sent was most excellent, especially Clapp's Favorite, but there will have to be great improvement in the cold storage arrangements for transit, and much more care exercised to make the temperature suit the fruit, maintaining the same degree all through the voyage. If they could only be put in this market in the same condition in which they are put on your markets, good business would be done."

Another excellent variety is the Duchess, when grown large, clean and free from curculio knots. Such pears, carefully graded as to size, may be shipped with confidence, for they are slower in ripening and will bring the highest prices in any of the British markets. Where the soil is suitable, probably no variety would be more desirable to plant in quantity for export. Of other varieties we have several that have proved themselves safe to export for profit, such as Bosc, Clairgeau, Diel, Lawrence and Anjou. The latter is a special favorite. The Kieffer is still on the doubtful list. There is little trouble in its reaching England in perfect condition, the only trouble is in its quality, which is most disappointing, and it is seldom wanted twice by the same buyer except for canning.

APPLES IN BOXES

FOR several years past the writer has been exporting a portion of his finest apples in boxes with good satisfaction. It may not have been altogether due to the boxes, but rather the greater care taken in putting up fancy samples in a small package. Some of our early apples were put up in half bushel cases, but these were too small for apples. Quoting on this point Prof. Robertson says: "I have only little to say about apples. We sent over altogether 146 packages. They were all landed in good condition. Nearly all pleased well, but there was a common complaint that the packages were much too small, holding only from 14 to 16 lbs. net of apples in each. We found these too small. They netted some fair prices, considering the size, but still they did not pay. Taking off the expenses, which were very heavy, these small packages netted anywhere from 5 or 6 cents up to 22 and 25 and 30 cents, which, after all, is a good price for 15 lbs of apples. A 40 or 50 pound case is the case that they want as a minimum for fancy apples. We sent some half bushel and some bushel cases. Here is one report: Apples—Speaking generally, we beg to say that in our judgment these boxes are much too small for apples. We think that apples should never be put, at this time of year, in boxes containing less than 40 lbs. That is still a a small package. For the last six weeks very large quantities of English eating apples have came in our market and been sold at an average of six shillings per hundred weight, which were quite as good

a quality and better condition than the shipped ones. Our English apples have not the color that yours have, but we are inclined to think that the expense of wrapping them in paper and putting them in small packages, as was done in this case, is at this time of year inadvisable." The same people wrote me a letter—a letter which I received only yesterday. It is not confidential, therefore I use the names. "By the S. S. Manchester Trader we received from Messrs. Pettit & Son and Mr. Andrews, of Grimsby, Ont., consignments of apples in boxes of about 45 to 50 lbs. gross. The quality and size were good, and such will always command good prices. We have written Messrs. Pettit and Andrews, advising them to send all they can, if they can ship the same quality and size, as we feel sure they will do well. We would be pleased if you would advise any of your shippers if they hold this A 1 stock to ship it here, packed in 40 lbs. net boxes, and the apples wrapped in tissue paper. It is no use sending small or medium sized fruit, as there is plenty of this kind on the market." Those apples, looking down the sales, sold from seven shillings, and in fact one lot of seven cases as high as 9s., from 9s. down to 4s. 6d, per case for everything except the samples. These are substantial good prices for 40 lbs. of apples.

At the same rate of expense as the shipments made by the Department, a package that size would cost about 40 cents for transportation and selling expenses. The freight charges varied according to the rates that prevailed on the ocean, and also as to whether a full carload was sent. If they sold for 7s. with 40 cents to come off, they would net about $1.28 per box.

EXORBITANT FREIGHT CHARGES

TWENTY five years ago, very little fruit was sent by freight. It was thought necessary to send it by express notwithstanding the exorbitant rates. Soon however it was found that the Express company was receiving all the profits and that very little was left to the poor fruit grower for his labor. The writer once shipped 300 baskets of peaches to Montreal. They were magnificent Crawfords, but the market was glutted and the whole lot sold for $111.00, of which $80.00 was taken by the express company for charges! Such outrageous charges led us to seek the fast freight service, which has been a great relief, but now that immense quantities of fruit are being sent forward, even the freight rates are far too high. Why, for example, should a car of grapes be carried from St. Catharines to Montreal for $56.00 and other fruit for $66.00? The fruits are now all put up in the same kind of packages, there is no more trouble handling the one than the other, why then the discriminatiom? This matter of transportation charges is most important, and has been referred to a committee of our Association, upon which rests the responsibility of bringing before the company the necessity of entirely new classification rates and lower charges for carrying fruit. We would suggest that local fruit growers' associations also take action to support our efforts.

GRADE MARKS FOR APPLES

NOTWITHSTANDING that the Fruit Marks Act permits the use of various terms to designate No. 1, No. 2, and No. 3 apples, it is most desirable in the interests of both seller and buyer that uniform terms should be adopted and defined. Nothing is simpler than the X's suggested by inspectors Lick and Carey at their Prince Edward County meetings; XXX standing for No. 1 fruit, which means that it shall be sound, uniform and at least 90 per cent clear of blemishes; XX for No. 2, and X for No. 3. In addition of course the shipper may add the word "extra" or "fancy" to

denote high color or unusual excellence. The most difficult thing for the ordinary shipper to do will be to assort to anything like a uniform size, unless he is fortunate enough to own a grader. He cannot trust his eye, and unless he is confident of the size, it is unsafe to mark it on the package, lest he lay himself open to a charge of fraud.

In our own packing, we have included size under these grades, as being most convenient in practice ; and apples 2¼ inches in diameter are placed in grade X ; 2½ inches in grade XX, and 2¾ inches in grade XXX, while apples above that will be stamped "extra."

THE DUCHESS APPLE

THIS beautiful variety contests the first place as an early summer apple, with the Red Astracan. It does not ripen quite so rapidly, and this gives it the advantage for export. One of the largest Duchess orchards in the world, says our contemporary the Sun, is probably the one of Dr. Young's, at Young's Point near Picton. He has 5000 trees of this one variety from which he began shipping fruit to Montreal the last week in July, and at the same time the writer began shipping Astrachans to Ottawa.

EXPORT OF PEARS

THE export of our pears to the British market will always be more or less regulated by the prices in the Canadian market. When No. 1 pears, averaging 2½ inches in diameter, net us less at home than 40 cents a twelve quart basket, there is little doubt that more money will be made in exporting them. Shipments have been forwarded by us every year now for five years past, and with very few exceptions, and these only when arriving over ripe, pears have netted us satisfactory prices. In the year of 1900 there were 2746 half bushel cases of pears forwarded, and the following extract from Professor Robertson's statements in our report will be worth quoting just now, when a good many pear growers are considering the wisdom of making trial shipments to the British market.

"The returns from the pears vary very much, partly owing to the size of the pears and partly owing to the condition of the pears as to ripeness Some pears landed a little too ripe, "dozy," and then later shipments were landed too green. Pears should be picked when the pips are about to turn brown. In the case of the very tender pears they should be picked *just before the pips turn brown.* If the late pears are packed in that condition they do not ripen in that way and then the English buyer cuts the pear down and looks at that part, if the pips are too brown he says they are going toward decay, and they go into the hands of the jobbers. A very early and tender pear should be picked at an earlier stage of ripeness than the latter pears which do not ripen so quickly. We all know that principle, but we have forgotten to put it in practice in the actual management of the shipping business. Here are the figures of one of the early lots; 55 packages from Mr. Woolverton were sold for 86.4 cents and netted 50. cents at Grimsby. The packages held about 16 or 18 lbs., the large ones a little more than that. The report to me from Manchester was that that was the actual weight of the pears. 95 packages from Mr. Van Duzer were sold at 93.7 cents netting 52.6 cents, and 145 packages of Bartletts, especially good, were sold in Manchester for $1.97 and netted in Grimsby $1.54 per case after all expenses were off.

The fruit shipped by D. J. McKinnon & Sons sold as follows ; First lot, 74 packages, were sold at $1.07 in London, and netted 85 cents in Grimsby ; Second lot, 77 packages, were sold at $1.21 in Manchester, and netted 82.2 cents, in Grimsby ; Third lot, 65 packages, were sold at $1.19 in Bristol, and netted 71.1 cents in Grimsby ;

Fourth lot, 60 packages, were sold at $1.23 in London, and netted 64.7 cents in Grimsby; Fifth lot, 11 packages, were sold at $1.90 in London, and netted $1.34 in Grimsby; Sixth lot, 32 packages, were sold at $1.07 in London, and netted 64 cents in Grimsby.

These differences seem inexplicable, but the correspondence and my reports from Grimsby and from our agent in London, indicated that every time when the pears were superior in quality, in size, and just right in condition, they fetched extreme prices and there was a great demand for them; whereas, when the pears were small in size or not in good condition, they struck a poor market, If you read the correspondence you would see the reason for the extreme differences in price in the same markets for fruit from the same shippers. Here are the returns from A. H. Pettit & Son; First lot 6 packages, were sold at $1.59 in London, and netted $1.14 in Grimsby; second lot 5 packages, were sold at $1.22 in Manchester, and netted 83 cents in Grimsby; Third lot, 15 packages, were sold at $1.21 in Bristol, and netted 72.6 cents in Grimsby; Fourth lot, 80 packages, were sold at $1.14 in London, and netted 55.5 cents in Grimsby; Fifth lot, 242 packages, were sold at $1.97 in London, and netted $1.40 in Grimsby; Sixth lot, 132 packages, were sold at $1.60 in London, ahd netted $1.14 in Grimsby.

The larger the lots the better they sell. If I were to quote you all the large lots only I would give you the best prices in every market. I mean, an appreciable quantity will fetch higher prices in than five or six cases of a sort. All you want at this meeting are instances giving general information. I want to read a few letters in that connection. This is from the Consignee in Covent Garden, London, in regard to the size of pears: "We notice that most of your fruit is small. Now a small pear on this market does not sell well. It must be large, bold, clear stuff. That is the reason of the success of California Pears." Now, that is the same firm that sold pears of ours later on at good prices when we sent what they wanted. "We think the size of pears you send should be no smaller than 60 or 62 in a case. When you get them up to 100 and 122 in a half bushel case, that is very small."

PROTECT THE FRIENDLY BIRDS

THE fruit grower is rightly indignant when at length after many years of careful cultivation and patient waiting he sees his first crop of beautiful cherries devoured by the Cedar Waxwing; but when he considers the benefit these birds confer, he should "forgive and forget." As advised on page 312, we should rather plant cherry trees purposely to grow food for them, and thus encourage them as helpers in our industry; for although they destroy great quantities of cherries, they are chiefly engaged in destroying insects, which if allowed to increase would be still more harmful. Forbes, in the report of Michigan State Horticultural Society, says, "This bird eats one hundred canker worms daily," and Beall, reporting for the United States Department of Agriculture, says, "The Cedar birds eat a certain amount of insect food at all times, when it can be obtained, and the greatest number of insects in the month of May, with a decrease during the succeeding months until September, when the percentage again rises, and that the young, while in the nest, are fed to a great extent on insect food."

OATS AS A COVER CROP

SINCE the great freeze of 1898, when whole orchards of fruit trees were destroyed and when nearly all the peach orchards in the County of Essex were killed at the root, unless some winter protection was given, the importance of cover crops has become more and more acknowledged

FIG. 2379.
Grass and trees have made this street beautiful.

among fruit growers. Crimson clover has been a favorite with many, while others have used rape and some rye. The latter has been used the last year or two, but unless ploughed under early in the spring, it causes a heavy drain upon the moisture in the soil and is thus an injury to growing plants.

At the meeting of Western New York fruit growers a Michigan fruit grower said that he had had more satisfaction with oats as an orchard cover crop, because it was a complete protection, at the same time dying down so that it did not become a drain upon the soil. Prof. Taft, Horticulturist at the Michigan Agricultural College, has been experimenting along this line, and his report for 1901 says :—

Oats seeded alone as an orchard-cover grew 15 to 18 inches high. They held snow and leaves during the winter, lessened the freezing and thawing of the soil, and also prevented the soil from freezing to as great a depth as on uncovered soils. The lessening of the injury from frost is considered one of the most vitally important results to be secured with orchard cover crops. Where oats are used as a cover crop the ground in the spring was practically free from weeds and remained moist considerably longer than where other crops were used. The oats were easily worked in with a disk harrow, and it is estimated that the cost of cultivating the orchard when oats were used was fully one-third less than when crimson clover was used. Rape and turnips used as cover crops, while fairly satisfactory, were unsightly during the winter and gave off an offensive odor. Crimson clover seeded with oats was less satisfactory than either sewn alone.

THE UP-TO-DATE TOWN

THERE is no more important work before our Horticultural Societies than that of civic improvement. American towns are awakening to the possibilities before them, each emulating the zeal of the other to such an extent that every man of taste and ability as a landscape architect is being pressed into active service. Nor is Ontario far behind, for the lawns and gardens of Hamilton and Toronto never presented a more beautiful appearance, and public sentiment demands an extension of the parks and

boulevards. "The value of the park to my mind," says Mr. Price in the first report of the Iowa Park and Forestry Association,* "is four fold; namely, sanitary, educational, commercial, and as a place of rest. First and primarily it ought to be a place of rest where the laboring class may come after their day's work is done and find to some extent the freedom of the country. Not only to the laboring class, but to all classes the park furnishes a place of rest. With abundance of shade and plenty of lawn, and no signs "Keep off the grass," the park is the popular resort both day and evenings for four months in the year.

In the park, for comfort, we need plenty of seats so that those who come may find vacant seats inviting them to sit down and rest awhile. I want to emphasize the importance of good grass in the park and the perfect liberty to come and go at will. To my mind a good lawn with the sign "Keep off the grass" stuck up is like showing a person a room covered with a beautiful carpet, and telling him he must not step on it; that it is made to look at, not for use. For real downright comfort and rest there is nothing like good grass where you may stretch out and, as Whitcombe Riley says:

"Lay out there and try to see
Jes how lazy you kin be.
Tumble round and souse your head
In the clover bloom, er pull
Yer straw hat acrost yer eyes
And peak through it at the skies."

*This report may be had for 22c from L. H. Pammel, Secretary, Ames, Iowa.

EDUCATIONAL VALUE OF A PARK

Strange that we should cling to the notion that all learning must be through books, the driest, dullest way of acquiring it. *There is a royal road to learning*, and that is through the eyes; and we learn many things faster by observation than by reading; and this is especially true of studying nature. The educational value of public park, if planted with a systematic collection of trees and shrubs, is beyond estimation, not only for the ordinary citizen, but also for the students of the schools and colleges, who here see the living subjects of their botanical studies.

FIG. 2380. ENTRANCE TO ARNOLD ARBORETUM, BOSTON PARK SYSTEM.

FIG. 2381. AGASSIZ BRIDGE, BOSTON.
Crossed by members of American Park and Out Door Association during their excursion.

LANDSCAPE ART

The time is past when a town or city can afford to simply make an enclosure and call it a park. Public taste is growing rapidly, fostered by our Horticultural and Civic Improvement Societies, and no park should be made without carefully studied plan, by one who is an expert. "Effective landscape gardening," says Klehm in "The Iowa Park and Forestry Association Report," "is an art, which is only acquired by considerable study, taste and judgment on the part of the artist engaged on its execution. The art has reference chiefly to the laying out of grounds and the arrangements and planting of trees, shrubs and plants in such a manner as to eventually produce the most pleasing effect; so far as circumstances in individual cases admits. Definite ideas are absolutely necessary and no attempt should be made in laying out, or improving grounds, without the fullest consideration being given first and the results calculated to prove certain.

POPULARISING PUBLIC PARKS

THIS was the subject of an interesting address by Dr. Elliot, president of Harvard University, before the American Park and Out Door Association, which met in Boston the first week in August. To enjoy a park, one must do more than ride through it, one must walk about; posts to tie horses are therefore essential, and seats for tired pedestrians. Announcements should be made of the seasons when shrubs and flowers are in bloom, and these should be in such profusion that no restriction will be needed about plucking; the grass should be for use as well as beauty, and no sign, "Keep off the grass," set up; every en-

couragement should be given for eating in the open air; for sketching and the use of the camera, thus leading the citizen out into contact with nature to become a student of her beauty. It was a courteous thing of the doctor, now over thirty years president of Harvard, to conduct our party through the yards and halls of the great university, pointing out the interesting features.

SCHOOL GARDEN WORK

This was treated by D. J. Crosby, of the Department of Agriculture, Washington, D. C., who divided them into teachers' gardens and pupils' gardens, the former being for the aid to the teaching, and often utilized to help make up the teacher's salary, which is the European method; and the latter being entirely in the pupils interest, who is entirely responsible for their keeping. In Europe there are over 100,000 school gardens, and the scheme is being widely adopted in America.

Our excursions about the city were highly educative, affording a fine study of school playgrounds, school gardens, and opportunities of views in the Charleston and Franklin parks, such as not surpassed for picturesque beauty anywhere in North America. Nor must we omit a mention of the Arnold Arboretum with its wonderful collection of trees and shrubs, where of lilacs alone we passed one continuous group of one hundred and sixty varieties.

RAILWAY STATION GROUNDS

NEED OF IMPROVEMENT—GRAND TRUNK AND CANADIAN PACIFIC STATIONS COMPARED WITH BOSTON AND ALBANY RAILWAY STATIONS—NOTES BY THE EDITOR

THE spirit of improvement is so generally discussed that it has even reached the Railway Corporations, and is evidenced in the transformation of the barren spots of sand and rubbish about their stations, bridges and terminals into lovely little lawns, bordered with pretty shrubbery and enlivened with beautiful flowers. The old fashioned stations along the line of the Grand Trunk, which were devoid of architectural features, are now being replaced by others of beautiful designs, and in some cases decorated with beautiful climbers. "It is one object of the American Park and Out Door Association," in the words of ex-president Holden at our Milwaukee meeting, to teach the owners of railroads to build beautiful depots, to lay out pretty gardens and grounds about them, to make the pathway through the country in which their roads run attractive. It is our mission to go through the school districts of the country, where there is so much neglect, and help school boards to lay out grounds, plant trees, and make handsome play-grounds for the children, and when new school houses are built to make them things of beauty, and not simply dry-goods boxes or brick vaults without form or color or any other attraction."

"I am pleased to note," said president E. J. Parker, "that the New York Central Railroad has recently engaged the services of a landscape architect. I am at present urging upon the officials of the Chicago, Burlington and Quincy Railroad that they stop planting annuals and adopt the use of native shrubs and trees. The annuals are but short lived, passing away with the first frost, and much could be done by the rail-

roads to beautify their stations; have unsightly buildings hidden, and make their roads attractive by judicious planting of trees, shrubs and vines."

FIG. 2382. AN ATTRACTIVE RAILWAY STATION.

In a recent journey to Boston, the writer was particularly charmed with the landscape art displayed about the stations of the Boston and Albany Railroad, shrubbery being so disposed along the carriage drive and turns as to charm the eye without interfering with their usefulness. "The transformation effected by the Boston and Albany Railroad, says W. H. Manning, Secretary of the American Park and Out Door Association: "is too well known to need much comment. Its stations and surroundings are known all over the country for their beautiful appearance and economy of arrangement. An expert gardener, with a corps of assistants, gives his entire time to the work which covers sixty acres. Although the road maintains a nursery of hardy plants near Boston, the stations themselves are practically its real nurseries, the plants being thinned out and cuttings made at regular intervals. The scheme of planting this road is unique, in that flowering shrubs and trees are the sole material used, invariably suitable materials for the combat with cinders, soot, dust and drought, in which the issue is the 'survival of the toughest.' The composition of the shrubs and trees remains beautiful after the leaves have fallen; and the bright berries of autumn and winter are no slight compensation for the mass flowers and verdure of the spring and summer. The 'carpet gardening' about stations on other roads

FIG. 2383. WELL PLANTED HERBACEOUS BORDER.

means only empty beds of dirt and cinders in winter.

"The General Manager of the Grand Rapids and Indiana Railway Company is thoroughly in accord with the spirit of this Association and believes that the object lesson furnished by efforts to improve and beautify station grounds conduces to better care on the part of employees, and further, that the public generally appreciates such efforts, and that wanton trespassing upon or defacement of corporate property is consequently much lessened. Besides planting trees, shrubs and annuals, this road is improving the condition of its buildings, and compelling owners of buildings upon property leased from the company to remove those that are unnecessary and unsightly, and to repair and paint others."

At Warren and Rochdale stations on the Boston and Albany Railroad, we notice that the walks and drives are bordered by beautiful lawns and clumps of shrubbery, the latter so disposed as to hide objectionable features and boundary lines; and at Rochdale, an elevated bank opposite the station, extending from a bridge east of the station to the west of it, affords a capital opportunity for a continuous planting of shrubbery, backing a fine extent of green lawn. At Palmer, a stone wall opposite the station is thickly covered with Boston Ivy, transforming it into a thing of beauty, while the well-kept lawn to the east is backed by irregular groups of shrubbery, and bordered on the south side by shade trees, while across it runs a gravel walk with a circular summer house with open sides at each approach.

Our Canadian Railways, especially the C.P.R., have begun to devote some attention to the station gardens, but great opportunities are open for transforming into beauty spots the ugly and most repulsive surroundings of our Canadian railway stations. This work should not be done haphazard, for while gardeners may carry out plans they have no genius for design; and to secure the best results a landscape gardener should be engaged to give designs suited to the varied conditions.

This plan has been recently adopted by the Chicago, Milwaukee and St. Paul Railway, whose directors have engaged E. A. McRae, landscape gardener to beautify the station plots with appropriate planting.

FIG. 2384, A RAILWAY STATION YARD.

First impressions of a town are lasting ones, and such impressions are fixed by unattractive conditions about the railroad station. An attractive station, with flowers and vines, will give pleasure to every resident, every visitor and every traveller who passes by.

OUR EXHIBITS AT WOLVERHAMPTON

ENGLISH FRUIT CROP A FAILURE—HOW CANADIANS CAN REACH INLAND TOWNS OF ENGLAND

A LETTER FROM

A. McD. ALLAN, F. R. H. S.

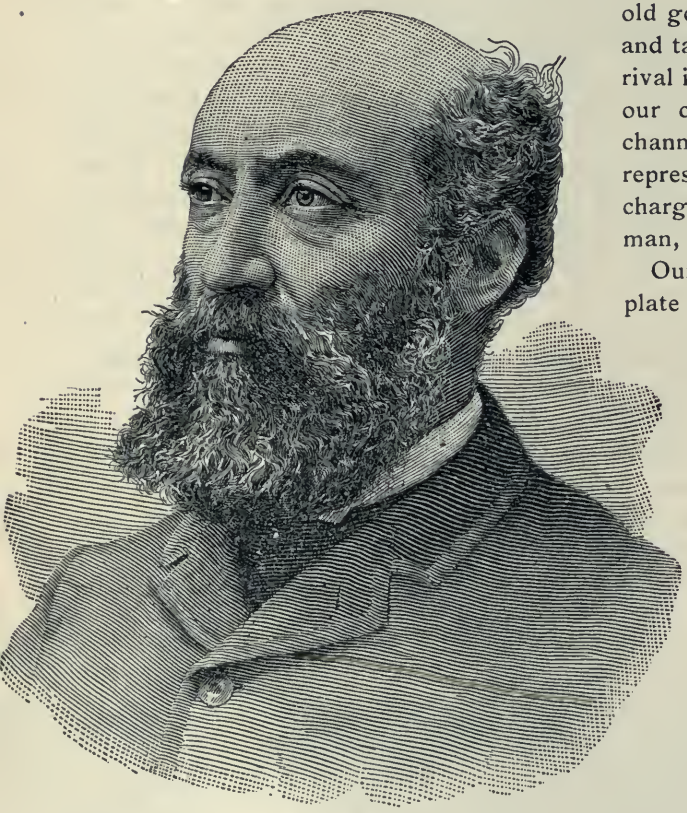

FIG. 2385. A. McD. ALLAN, F. R. H. S.
The Supt. of Horticulture for Canada at the Wolverhampton Exposition, England.

I FIND a great number of people who would use our canned goods more freely if they were certain of their freshness, and many have suggested that every factory should mark upon every can the year of its make as a guarantee to the consumer. I am told that with the keen competition among grocers many are ready to buy up any kind of cheap or damaged or old goods for the purpose of cutting prices and taking trade away from his neighboring rival in business. But notwithstanding all our canned goods are working into new channels continually, and the Government representative at the Exhibition, who has charge of the sales department, is a busy man, doing a practical work for Canada.

Our cold storage chamber has double plate glass upon three sides, so that all goods inside can be seen by the public. Our apples form an important part of the exhibit. One pigeon-holed case covers one entire side and is filled with apple specimens, each wound in tissue and showing the stem, the blossom end or cheek, whichever part seems most perfect. Then I have boxes and cases of all kinds and sizes with enough fruit to show our various methods of packing and our different kinds of packages. It would be a very easy matter to secure large contracts for these for our forthcoming crop, but I do not think Mr. Moore, the sales agent, understands the handling of fresh fruits, and will not likely attempt it.

The Canadian pavilion continues to form the chief attraction here, and there seems to be a strong disposition on the part of every dealer to do business with Canada; therefore I trust the advertising given here will be followed up by trade agents from Canada making personal call upon dealers in all provincial towns as well as the cities. The British dealer will be slow to come to us,

but if we go to him we will deal, cautiously, to be sure at first, but with increased orders if we give him the goods he wants and put up the way he wants.

The English dealer is the most stubborn man upon the earth, and yet is open to conviction although he wont admit it ; he can go in purchasing our goods and at the same time you can't get him to admit their superiority perhaps. But the fact is, he is simply testing yourself and your brand and you don't know it.

The illness of the King, and disappointments and heavy loss incurred through failure of coronation, has cast a gloom everywhere. But this will soon pass over with returning health of the King. Our illuminations and holidays were celebrated and attracted great crowds, and with the advent of warm weather we are sure of good daily attendance at the Exhibition.

So far as I have heard, the fruit crop all over England is a failure, certainly in the Midland counties wet weather and frost has destroyed all, and Canada is expected to send in a larger quota than ever. If shippers would arrange to deliver in provincial towns they would meet a hearty demand from dealers. This could easily be done by taking through bills of lading, say to London via Liverpool, with instructions to deliver parcels at various towns upon the route. This would ensure much larger orders, as it would encourage a larger consumption of the Canadian product, which is considered altogether the best in the market.

THE BURLINGTON FRUIT EXPORTERS

NOTES BY THE EDITOR.

MUCH credit is due a few enterprising fruit growers at Burlington for their enterprise as Canadian pioneers in forwarding choice apples and tender fruits in boxes to the British market. The secretary of the company, and of the Burlington Fruit Growers' Association, is Mr. Wm. Fisher, and we found him on the 9th of August busily engaged in paying off his Indian berry pickers. Busy as he was, however, he left his business for a short time to give us some pointers of public interest. His orchard is by no means a small one, including about 2000 plum trees, 3000 pear trees, 200 each of cherry and peach, and about 30 acres of apple trees, and all seemed to be under good and careful cultivation. His soil must be well adapted to strawberries, for his seven acres yielded 48,000 quarts this season, an average of about 7000 quarts an acre. We asked for information about the shipping company.

"Well," said he, "we have no special organization. Five or six of us as fruit growers agree to ship together and make up car lots. For fifteen or twenty years past we have been working together in this way. There are only five or six of us, viz., George E. Fisher, C. J. Davis, J. S. Freeman, W. B. Hopkins, A. W. Peart, and myself, though sometimes we invite others to join us in making up a car. Twelve years ago we shipped the first apples in boxes, three to the barrel. Now we use a trifle smaller box, four to the barrel."

"Do you propose to export your apples and pears this year?"

"Yes, certainly we do, unless we are offered a higher price at home. We always export our apples unless we are offered $2.50 a barrel or over in our home market. We expect to forward a car of Duchess about the end of August. We would ship more freely if we could fully trust the cold

storage, but until quite recently this has been quite faulty; and last year we had a very unsatisfactory experience with cold storage on ship board. With this exception, however, we have had fairly good success, and sometimes have done remarkably well in the Glasgow market."

APPLE CROP REPORTS NEEDED

"I think," said Mr. W. B. Hopkins, "that crop reports come too much through apple buyers and speculators, who try to make us believe that there is a great surplus and that we must not expect over fifty cents a barrel! No doubt this is good policy on the part of the buyer, but I think the Government, through your journal, ought to give the growers' interests their attention and guard us against speculators."

Well, the reports so far received at our office, we said, indicate a short crop in Europe, and consequently we ought to get good prices in spite of the quantity in our apple sections. During a recent journey by the writer through Maine and Massachusetts, it was a matter of special comment how few apple orchards can be seen, and many that were seen were not heavily loaded. Baldwins especially were light in many places. "Yes," said Mr. Peart, "and such a quantity of apples have dropped during the month of July, that the crop is much less than the early promise."

TOMATOES FOR PROFIT

Noticing that Mr. Peart grows tomatoes for market we asked him for his experience, that we might compare it with Mr. Armstrong, of Queenston. He was two weeks behind the latter in his first shipment, which he made about the middle of July. "I grew tomatoes," he said, "to fill in the season of marketing between the season of currants and blackcaps, and my plum harvest, and find them quite a satisfaction. I usually plant about half an acre. My main crop variety is Dominion Day; Ruby is a trifle earlier, but the former brings me more money, because it is smooth skinned and regular in form. I consider it much better than Atlantic Prize, and quite as early."

PEARS FOR EXPORT

"I have great confidence in the Kieffer for export," said Mr. Fisher. "I think it will yet be highly valued because it carries so well. Nor is it always of poor quality, but sometimes we find it developing a very excellent flavor. I am inclined to believe very much in the individuality of the Kieffer and that some variations in this variety are so distinctive and valuable that they should be continued by propagation from the trees which develop them; I mean such traits as large size, especially bright color, and better quality. For export I would plant Bartlett, Duchess and Kieffer."

The Ontario Department of Agriculture has in press a very valuable bulletin on *The Cold Storage of Fruit*, by Profs. Reynolds and Hutt, of the Agricultural College, Guelph. Fruit growers interested in the preservation of their products should drop a post card to the Department at Toronto asking for a copy.

OUR BURLINGTON FRUIT STATION

BEST CURRANTS FOR PROFITS — BLACKBERRIES DISCARDED — HOW TO PRUNE THEM

IT was the 8th of August when we visited Mr. A. W. Peart, our experimenter at Freeman. We found him very busy harvesting a heavy crop of oats, and yet he had time to talk about fruit and tell us some of the results of his experimental work. How Mr. Peart can combine agriculture and fruit growing on such a large scale is somewhat surprising, for he has a very large farm which he conducts in first-class manner, and yet has large commercial orchards of apples, pears, plums and cherries and small fruits.

His power to grapple with such conditions is largely due to his university training, for Mr. Peart's case is a clear evidence of the value of education to a farmer in his power to grapple with the problems and work them to a successful issue. "I have two boys," said he, "aged thirteen and fifteen, and I am bringing them up to work. To succeed in a profession or on a farm one must learn preserving application to the thing in hand, and whether they work with their brains at school or with their hands on my farm, I consider this habit the first characteristic to be developed. I am making the boys a little money allowance of late and find that this is an encouragement to them."

THE BEST RED CURRANT

One thing every fruit grower wants to know and that is, what will pay the best, so we asked Mr. Peart for his experience with the many varieties of currants in his experimental plot:

"The Wilder still leads; it is the largest, best in quality and most productive. It is one I would plant commercially in preference to any other. This year it dropped a portion of its foliage, but probably this was due to the wet weather; still it was not half as bad in this respect as Cherry and Fay. We had always given Cherry the first place and Fay the next on account of the fine size of the berry, but Wilder is also large and so much more productive that we are willing to yield first place to it. Pomona is very promising indeed, but it so much resembles Wilder that it is a question if there is really any difference. Perhaps another season's trial at our Burlington station will settle this question."

THE MOST PRODUCTIVE BLACK CURRANT

There are so many people who grow discouraged with black currants that we inquired particularly of Mr. Peart whether there was any variety better than Naples or Lees: "There are three varieties which I think are superior," said he, "Collins Prolific, Saunders and Black Victoria, though I would hardly throw out Naples; for on heavy rich clay or gravelly loam it is productive and profitable. The bush of Collins is wonderfully vigorous and the most productive of all. Lees and Champion I would reject entirely."

SOILS FOR FRUIT

The secret of success with black currants and indeed with all fruits seems to be the selection of suitable soil, and many fruits that go to wood on rich sandy loam are most productive on heavier soil. The cherry with Mr. Peart succeeds best on high gravelly loam, well drained, and his results on such soil seem almost as marked as those obtained about Winona on clay loam.

BLACKBERRIES FOR PROFIT

Now, since Mr. Peart has all varieties of blackberries under test, we were especially

FIG. 2386. WILDER CURRANT.

interested in knowing which seemed the most profitable: "I think," said he, "that it would be between the old Kittatinny on the one hand and either Agawam or Western Triumph on the other."

But is not Kittatinny subject to orange rust? I know of a plantation of them which is being ruined by this fungus, and most are being dug out entirely. The other varieties do not seem susceptible to this rust.

"Well, at Burlington the Orange Rust does not trouble us, and the Kittatinny being our largest and finest berry, brings the most money in the market; on the other hand, Agawam and Western Triumph are more productive and therefore give as much money return per acre of plantation. The Gainor is a fine all round variety and very promising. The bush is a strong grower and the berry quite large."

BLACKBERRIES FOR THE AMATEUR

"I do not know of any berry for all purposes better than the Kittatinny, whether for home garden or market. The Maxwell is larger if anything, but not as strong a grower, and the Wachusetts has the advantage of being thornless. For first early I would plant Early King, it is better than Early Harvest."

"Here," continued he, "is a list of varieties that may as well be entirely discarded from our plantations and should no longer be carried by nurserymen in their catalogues, viz.: Wilson's Early, Wilson's Junior, Eldorado, Minnewaski and Lovett's Best."

In this we agree with Mr. Peart, for what use is it for nurserymen to burden themselves growing varieties which are not needed, and if we can counsel fruit growers not to ask for them, they will be soon omitted and our work that much simplified.

PRUNING BLACKBERRIES

There are so many notions about pruning of blackberries that we inquired especially into the methods adopted about Burlington. At Craighurst Mr. Caston grows his Snyders on long upright canes and gets immense loads. "I believe," said Mr. Peart, "in the most severe pruning for Snyder and Western Triumph, because if you leave too much wood the fruit will dry up ; the bush cannot mature all the fruit that would set. I cut them back in July to about 3½ to 4 feet high, telling my boys to cut the canes at the 'height of their eyes,' and then later I shorten the laterals. The Kittatinny does not need such severe pruning, for it never overloads."

FRUITS IN COLD STORAGE

BY

A. McD. ALLAN

GODERICH, ONT.

THERE are some points in our fruits kept in cold storage that may be interesting to members of the association and growers generally.

It is evident that samples for storage should be more carefully selected, and no imperfect apple placed in a package. Stems should not be taken out as this causes often a slight wound which soon begins to rot. The skin must not be broken or decay will ensue. In many kinds a bruise induces decay. In highly colored kinds if the color is perfect the apple will keep longer, hence samples intended for long keeping should be selected from trees that are well opened to the air and sun. Green Baldwins were all worthless while high colored samples were in good order. Ben Davis all look well on the colored cheek but the green sides all come out black, while an occasional high colored one is in fine order where the color is well striped all over. King has not kept well because it was not picked from the tree soon enough. Wealthy, where not bruised nor stem removed and color evenly distributed, kept well. Spy is a splendid keeper but must not be bruised and color must be well up.

Peck's Pleasant when perfect possesses only a red cheek; it keeps well, but when decay begins it is invariably found in the green surface, and the crimson cheek is perfect. Fameuse, like Wealthy, decays more from bruising, but it does not keep as well as Wealthy.

Stark is a poor keeper, probably because it has poor flavor and coarse texture.

Fallawater has been disappointing, I think chiefly because samples were taken for size without regard to color. Mann, where of even size and well handled, kept well, but even here we find decay does not affect the sunny cheek as readily as the other. Jonathan where not bruised is good yet. Canada

Reds are nearly all good in form, but where lacking in color have turned black, and the fungous spotting appears to affect this variety worse than Spy in inducing decay. Bell-flowers were all gone. Spitzenburg well colored and without bruise has kept well, but where stem was removed in picking rot ensued from that part. Seek should have been picked sooner, I fancy, and only a few specimens were fit for the tables. Golden Russet kept well where the sample showed full maturity in size and coloring, but those from unpruned trees where the sun did not reach them and left them at picking perfectly green were worthless. Roxbury gave the same evidence, as did also Pomme Grise and Swazie. Nonpariel was generally well up in its bright cinnamon color and samples good. Greening did not afford us a sample for the tables and Grimes shared the same fate. Why was this? I think the want of proper cultivation and manuring chiefly as all the samples were under size.

From all I have seen to me it is evident that more care must be taken in studying just when a variety is properly matured and ready for picking instead of the present method of picking "in the fall" generally. Evidently a King should be picked some time before a Baldwin. We had not a specimen of Ribston because they were picked likely too late; they were more than mature and decay, or its primary elements had set in. Tallman was tall starved specimens and quite unfit for use. Wagener was in the same position, with the exception that where a good colored cheek appeared it was still bright.

Let growers draw a moral from these facts and we will hear them universally crying out, "cultivate, manure, trim and generally care for the orchard if you want good fruit." Study the season of maturing in each variety for this is all important when picking time comes.

Spy held as tenaciously to flavor as any variety in the list, while Ben Davis is, judging from what we have here, one of the most disappointing, for even where the specimen is outwardly perfect in form and color, when opened it is flavorless and often becoming dry and "punky," but then we must remember that it never was blessed with much flavor.

Wolverhampton. Eng.,
July 28th, 1902.

THE FRUIT CROP IN ENGLAND

The reports of a large receiver of fruit in England on the fruit situation, there is as follows:

"The fruit crop here (England) is worse than it has been for years past, and although there may be a fair quantity of early apples there is not likely to be a quantity of sufficient importance to affect the sale of Canadian apples."

Mr. W. A. McKinnon, chief of the fruit division, who is in England at the present time investigating the question of markets and transportation in the interests of the fruit trade, reports that he has received a cordial reception and has been able to examine several lots of fruit from California and other foreign countries as they have left the steamship. His report will be awaited with great interest by the fruit growers of Ontario.

MEN WHO HAVE SUCCEEDED—VI

J. H. HALE

ELECTRIC CAR TRANSPORTATION—WHOLESALE PACKING—GRADING PEACHES—MUSIC IN PACKING SHED

HAVING once by personal contact and association established a name and reputation for my peaches among the most critical consumers, I have since 1889 entrusted their distribution to commission men in the various cities. I insisted upon these agents visiting the orchard several times each year, so as to be in full touch and sympathy with all the work of production and preparation for the market, and thus be in position to place the fruit intelligently before the consumers.

An electric car line from Hartford having been built along our street in 1895, with a siding right at the farm, I determined to get rid of the long wagon haul by night to the city; and by special contract with the railway people, three cars were arranged to hold the peach baskets. These cars were loaded through the day and early in the evening. In the early morning a motor car would haul the loaded cars to the city, where, along the business streets, just before the cars were required for passenger service, fruit would be unloaded and stacked up in front of the leading stores. My son, who looked after the loading would also check it out, and see that the empty cars were back on the home siding before a new day's work had begun on the farm, so that as far as I can learn, this was the first farm in America to make daily use of electric cars in transporting its produce direct from the farm to the city markets.

The service has been maintained ever since, and the fruit travels in better order and at less cost than on wagons. The new style market wagon has already attracted much attention. In the season of 1901 peaches from the Hale orchard at Seymour, Conn., were transported by electricity to Bridgeport, fifteen miles away, and the time is not far distant when electric car lines are to be an important factor in the country.

"Thinning out" the little green peaches

FIG. 2387. CARRYING PEACHES BY ELECTRIC RAILWAY.

is carefully practiced. Three hundred large, perfect peaches from one tree will weigh more pounds, fill more crates, and sell for more money than would 1,000 or 1,500 peaches from the same tree overcrowded, and the quality is far superior.

After the thinning season, crate making is continued, wagons fixed, barracks and camps put in order, and everything braced up for the coming rush. A trip is made all

FIG. 2388. GATHERING PEACHES IN HALE ORCHARDS.

through the consuming territory at the north ; commission men and leading retailers are told fully and freely of the crop prospects, visits are made to the general freight agents and officers of the leading railroads, and a personal interest awakened that is beneficial to all concerned.

As soon as the peaches begin to ripen, the most experienced are placed in charge of gangs of ten and fifteen, which are later increased to forty or fifty. Every picker has his number stencilled on a little canvas sack, in which are tickets of corresponding number, one of which is dropped in the bottom of each basket. All pickers are taught to recognize a matured peach at sight, and they are only touched by hand when ready to be picked.

Careful inspection of the fruit in each basket as the harvest proceeds tones up the quality of the pickers' work. Wagons with hundreds of extra baskets are always on hand, including two or more boys with each gang to "tote" baskets, so the harvesters may lose no time looking for "empties." Low-down spring wagons, drawn by small mules, creep in and out among the trees and haul the fruit to the main avenues, where the baskets are loaded on large floats on their way to the great central packing house.

White labor is used entirely in the packing house, and at two long tables running the full length of the great building stand the men and women, who, under careful instruction, take the fruit from the field baskets and assort it into three sizes, placing it in canvas trays in front of them. All inferior or over-ripe specimens are set aside for the evaporator. If any baskets show a lack of skill or care in picking the ticket in the bottom tells where to look for the trouble. Notice is given to the inspector, and from him to the field foreman, who gallops away on horseback to brace up the weak brother. The sorters save all the tickets found in the bottom of the baskets, and each is given due credit for tickets turned in.

On the opposite side of the sorting table

stand the packers, who take peaches from the trays and carefully pack the six baskets in one, each crate solidly full. Each grade requires a particular style of pack to get all the baskets rounding and full every time. Several expert instructors in packing work up and down the line constantly watching the work, and when the package is complete the packer's number is put on the crate label and on a ticket on top. A helper supplies a new crate and takes the full one to the nailing table, where it passes final inspection, and if not perfect in every way is sent back for re-packing. Every hour through the day the tickets are taken to the office and a record made of all picking, sorting and packing, so that at all times the superintendent and myself can know just how things are moving, and what each individual is doing.

As soon as covers are nailed on the crates they are rushed into the refrigerator car waiting alongside, and 560 or more crates that go in a car are so spaced that there is a circulation of cold air about each one at all times in transit. These cars are "iced up" twelve to twenty-four hours before loading begins. The warm fruit starts the ice to melting fast, and in a few hours when the fruit is cold, from two to three tons more ice are required to fill the bunkers. In the fifty hours running time to New York the cars are re-iced three times, and those going to New England points once again at Jersey City.

Bad weather in harvesting, a neglect to re-ice a car in transit, arrival at unseasonable hours, bad weather or an over-crowded market on the day of sale—any of these may cause the fruit to sell far below the actual cost of putting up and delivering, to say nothing of cost of production.

We have loaded as many as thirteen cars in a single day, and ten a day for eight days in succession. There are about thirty peaches to the average basket, six baskets to a crate, five hundred and sixty crates to a car, making for a day producing ten carloads practically 1,000,000 peaches, each of which is handled three times in the operation each day, besides all the other work incidental to such extended packing.

FIG. 2389. PACKING PEACHES.

The packing shed is a cool airy place, comfortable at all times in the hottest weather, yet the days are long and busy and noting that the workers were tired and languid by night, four years ago I tried a plan of resting them with music. A good string band of six pieces was hired to play each afternoon from two o'clock until dark or until all the work was finished. There was soft, quiet music for an hour or two, and then quick lively airs until the finish, music all the time.

THE FRUIT MARKS ACT

WHAT THE ACT MEANS AND HOW IT OPERATES

A LETTER FROM

MR. ALEXANDER McNEILL

DOMINION FRUIT INSPECTOR

AFTER the parliament of Canada passed the Fruit Marks Act in 1901, the Minister of Agriculture directed that every opportunity should be afforded the fruit growers and packers of the Dominion to meet its requirements and to fulfil their obligations to the public, and for one year the work of the department in this respect was informational and educational. This year some amendments were made to the Act as originally passed, and to-day the Act, in all its provisions, is "as plain as a pikestaff," and every clause of it so simple that "he who runs may read." No farmer, or fruit grower, or packer who is honest in his endeavors and straightforward in his trading need fear any of its clauses. The Act is being enforced, and the inspectors appointed to execute its requirements have been instructed to do their duty. They are the servants of the crown, Parliament has definitely pronounced its judgment upon the false and fraudulent packing and marking of fruit consignments, and men have been selected to carry out the regulations placed on the statute book for the purpose of protecting honest traders from unprincipled dealers, and of preserving inviolate the fair commercial fame of Canada from unscrupulous packers. In other words, the Act will ensure to the public of the Dominion and to commission agents and the public generally in Great Britain and elsewhere, that the fruit is correctly marked and honestly packed.

The principal sections of the Act are:

Section 4. Every person who, by himself or through the agency of another person, packs fruit in a closed package, intended for sale, shall cause the package to be marked in a plain and indelible manner, before it is taken from the premises where it is packed—

(a) With the initials of his Christian name, and his full surname and address;

(b) With the name of the variety or varieties; and

(c) With a designation of the grade of fruit, which shall include one of the following six marks: For fruit of the first quality, No. 1, or XXX; for fruit of the second quality, No. 2, or XX; and for fruit of the third quality, No. 3, or X; but the said mark may be accompanied by any other designation of grade, provided that designation is not inconsistent with, or marked more conspicuously than, the one of the said six marks which is used on the said package.

Section 5. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package and intended for sale, unless such package is marked as required by the next preceding section.

Section 6. No person shall sell, or offer, expose or have in his possession for sale any fruit packed in a closed package, upon which package is marked any designation which represents such fruit as of No. 1, or XXX, finest, best or extra good quality, unless such fruit consist of well-grown specimens of one variety, sound, of nearly uniform size, of good color for the variety, of normal shape, and not less than

ninety per cent., free from scab, worm holes, bruises and other defects, and properly packed.

Section 7. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than fifteen per cent of such fruit is substantially smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package.

Explanations of its application may be taken thus. On packages packed or marked contrary to the provisions of the Act, inspectors may, after notifying the packer by letter or telegram, place the words "falsely packed" or "falsely marked," and a fine of $40 may be imposed for illegally removing the inspector's brand.

It will be noticed that only "closed packages" need be marked. A closed package is defined to be a box or barrel, the contents of which cannot be seen or inspected when such is closed. Baskets, berry crates or berry boxes even, with veneer covers, are not considered closed packages, and therefore do not require marking. Cranberries and all wild fruit are not subject to the provisions of the Act.

Merchants are held responsible for the fruit they offer for sale (or fruit in their possession for sale), but the original wrongdoer, if found, will in every case be prosecuted.

The penalty for a violation of the law with reference to packing and marking is not less than 25 cents and not more than $1.00 per package; for removing an inspector's brand, $40; for obstructing an inspector, $25 to $500. The fines are divided equally between the informant and the crown.

Inspectors are given large powers under the Act to enter premises for the purpose of making an examination and to detain shipments of fruit for the same purpose. The packer, however, is amply protected by the stipulation that immediate notice must be given by the inspector to the packer when fruit, which at all times is at the risk of the owner, is branded or detained, and the inspector who exceeds his authority is subject to a heavy penalty.

The main points of the Act may be summed up as follows:

(1) The face of all fruit packages must fairly represent the fruit throughout.

(2) Closed boxes and barrels must be marked with the name and address of the packer, the variety of the fruit, and its grade.

(3) It is an offence within the meaning of the Act to sell, to offer for sale, or to have in possession for sale, fraudulently packed or marked fruit, even when the buyer and seller are ignorant of the fact, as well as when one or both have knowledge of the fact.

(4) The Act does not prevent the packing or selling of any grade of fruit that is properly picked and marked.

(5) The Act does not provide for the inspection of particular lots of fruit at the request of the buyer or seller.

(6) Commission merchants who, after notice, handle fruit put up contrary to the provisions of the Act, will be proceeded against.

(7) There is no definition of grades marked No. 2, or XX; No. 3, or X.

Already the beneficial effect of this Act is being felt, and when it is fully known that dishonesty in packing and describing Canadian fruit does not exist, an enormous impetus will be given to our fruit industry in all the markets of the world. At present inquiries are being made concerning the trans-Atlantic shipments of early Cana-

dian apples. The Department of Agriculture will not take any responsibility, but through the Commissioner of Agriculture and Dairying will assist in securing cool or cold storage space on ocean steamers if early information be given as to the probable quantity, the date of shipment, and the destination desired.

It will pay to send only selected apples of choice individual quality, and packed in boxes rather than in barrels. It will be necessary to have the apples picked and packed on the green or firm side, so that they may be delivered in the United Kingdom in such a state that they may be handled with a very small percentage of bruised or decayed ones by the retail dealers into whose hands they will go from the wholesale centres.

THE TRANSPORTATION OF APPLES

ADDRESS DELIVERED BY R. J. GRAHAM, OF BELLEVILLE, BEFORE THE NATIONAL APPLE SHIPPERS' ASSOCIATION, WHICH MET AT ROCHESTER, AUGUST 6 AND 7.

A VERY interesting paper on transportation was then read by R. J. Graham. Mr. Graham is Mayor of Belleville, Ont., and is also a large apple shipper, and more particularly a large apple evaporator.

TRANSPORTATION OF APPLES

This subject naturally divides itself into two heads, viz., "How can we transport the fruit?" and "In what kind of a package shall we put it?"

To get an apple from the tree to the consumer at the least cost, and in the most perfect condition, is a problem seriously occupying the attention of all fruit growers and shippers, particularly the members of this association, whose success or failure largely depends on their ability in this direction.

The first step in transportation is from the tree to the basket, where, in most cases, serious damage is done

Apple pickers require brains as well as muscle, and to pick an apple properly requires some study and experience. The writer has noticed many apples literally pulled from the trees with the fruit spur attached, not only damaging the fruit, but ruining the tree itself for future bearing.

If apples are carefully turned upwards they will break from the fruit spur clean, with the least resistance, and avoid thumb-marks so common in apples, which seriously impair the keeping quality and spoil the appearance, particularly of green or yellow fruit. All shippers should instruct their packers very particularly on this point.

The next move in transportation is from the basket to the barrel or package in which the apples are taken to market. Again they run a most hazardous gauntlet. Most apples are dumped on the ground in heaps, whereas, in the writer's opinion, apples never should touch the ground, but be carefully emptied on a canvas stretcher of simple construction, holding about three or four barrels at most, and about 3½ to 4 feet high, so that the sorter may stand up to his work and use both hands and eyes in this most important transaction.

From the stretcher they should go directly into the package for market or store, graded as the shipper's customers may desire.

Now that the fruit is in the package at the tree, it should be carefully transported to the fruit house, railway or boat landing, at once, on a conveyance having springs. Much fruit is damaged seriously by remaining in barrels on the ground after packing, or by being moved in lumber wagons without springs over rough roads. These can be easily procured to attach to any ordinary wagon, and no fruit grower should be without them.

When we get the apples to the depot we again confront a difficult problem. What kind of a car should we use, or what kind can we secure from the carrier? Arrangements should invariably be made with the railway to furnish the kind of a car desired and as required. No apples should remain at a depot longer than is necessary to load them directly into a car and get away the same evening. For short hauls ventilated cars should be used, and the car not filled to the roof, as frequently happens, but leave ample room for circulation of air. For any distance requiring more than twenty-four hours' railway journey, refrigerator cars should be used, and have them sufficiently iced. From the cars the apples should go direct to destination without further delay, either to the consumer, fruit house or steamer, for ocean transportation. Here again we confront a problem. What kind of space shall we use, or what can we secure?

Apples usually receive little care at the hands of vessel owners and stevedores, are generally handled roughly, and placed in the hold as closely stowed as possible, and in most cases, without ventilation, and if they survive this gauntlet, without being cooked and ruined, the shipper may consider himself fortunate.

Can this be remedied? Certainly the combined action of such an association as this can do much to bring about the much needed reforms. Let there be an active transportation committee and let us shippers be loyal to their recommendations demanding ventilated space or cool storage.

In Canada, thanks to agitation by those interested, the government has taken this matter in hand, and we have the promise this season of a fair number of vessels fitted with suction fans creating a forced draught through the holds where the apples are stowed. The writer has found chemical storage in transit very unreliable. Temperatures are not often maintained properly, and the fruit often comes out too cold or frosted, and when coming in contact with warmer atmosphere sweat and present a poor appearance to the buyer on first examination, and in some cases produce mould on the fruit or inside of the package.

Again, why should a barrel of apples pay more freight than a barrel of flour? This question has often been asked railway tariff committees, but has never yet been satisfactorily answered. So far as I can learn, the real reason is because they can collect more. They apparently think the business will stand it, but in a year like the present, when there is an abundant crop, cheap transportation would materially increase our markets, and place before the laboring classes, which form the masses of European population, fruit within the reach of their means.

Can this be accomplished? I maintain it can. A barrel of flour weighs about 50 pounds more than a barrel of apples, and usually is carried for about half the price. Does the barrel of apples get any more care from the carriers, any better protection from the weather, any better space, or is there any greater risks incurred? Do they pay any more claims or give any greater attention to the business? So far

as I can ascertain, the only thing they can claim is better despatch en route, as perishable freight is not so often side-tracked, but I have yet to learn of a railway that paid claims on apples for ordinary delay in transit, and I consider the handicap in weight quite sufficient to enable the carriers to move a barrel of apples quite as cheaply as a barrel of flour. Agitation would bring about this much needed reform.

We next consider the various kinds of packages in use and their respective advantages. The barrel is the standard used for perhaps 90 per cent. of the fruit, but is it the best? California has adopted the box of four or five tiers, averaging about 40 pounds net of fruit, and this package is getting quite popular in some localities, and has the advantage of being more suitable for a grocer to handle as package goods. Many people would buy a box of those apples who could not be induced to buy a barrel at a time. When apples are retailed by the pound, much of the fruit is injured by the customer or dealer turning it over, pinching it and examining it in a variety of ways that would not be done in a package. The cost of the package is about the same in each case.

For the home trade and immediate use, the bushel crate is becoming quite popular in Michigan, and has some advantages. It is cheaper than the barrel, saves all expense of packing, can be easier handled, all the fruit is open to view, any farmer can bring apples to the depot direct from the trees, and is a convenient package for the dealer and consumer when the apples are required for prompt use.

For high class trade a compartment box is coming into use, and has been favorably received in the markets of Europe. These boxes are made to hold various amounts and different size apples, and are made something like an egg case, each apple having a compartment by itself and is thoroughly ventilated. A firm in London, Ontario, are now manufacturing these, samples of which are here. The fruit growers of Niagara district are using them quite extensively. They cost more than a barrel, but for a high class trade there is nothing better. Apples stored in these packages for the Pan-American Exhibition with the Buffalo Cold Storage Co., kept in good condition for a year. One thing is essential to the transportation of apples in any package, viz., air circulation.

I feel convinced that fully 50 per cent. of our apples are ruined from improper transportation from some of the causes referred to, and if we, as apple shippers, ever expect to climb the ladder of success to its topmost step, it can only be accomplished by giving this most important question our earnest consideration.

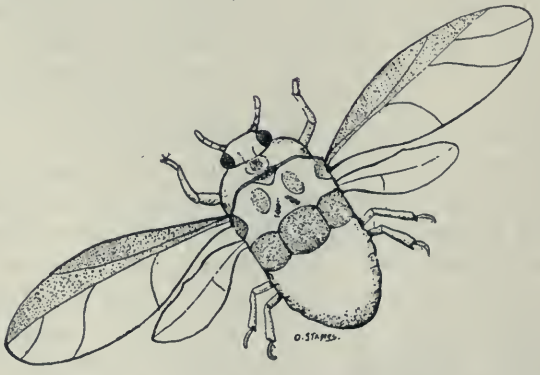

FIG. 2390. THE SPRUCE GALL LOUSE. See page 377.

THE SPRUCE GALL-LOUSE

(CHERMES ABIETIS)

NEW APPLICATION OF FUMIGATION — PERFECT SUCCESS ATTAINED

A LETTER FROM

G. E. FISHER

PROVINCIAL INSPECTOR, SAN JOSE SCALE

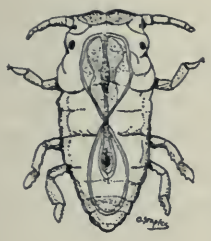

FIG. 2391.

GALL-LICE are so protected in the galls they produce as to be practically beyond the reach of sprays. Whale oil soap, crude petroleum, kerosene, fish oil, and a strong solution of caustic potash were used without result. Fumigation with the gas from the cyanide of potash is the only effective remedy I am acquainted with, and this has proved very satisfactory indeed. In treating insects the life history must be carefully observed, some points of which are said to be as follows :—

The gall louse lays its eggs in the fall, one egg in each section of the bud attacked. The eggs are hatched by the warmth of the following spring. During the balance of its season the insect is viviparous. As many as twenty-five lice have been found in a single cell—which mature and leave the cell during August and some possibly in July. Treatment in winter is not practicable because of the difficulty of destroying the vitality of eggs, and, as the mature insects are moving in August, treatment in July is likely to be most effective and should be done at night and when the foliage is dry, to avoid injuring it.

FIG. 2393.

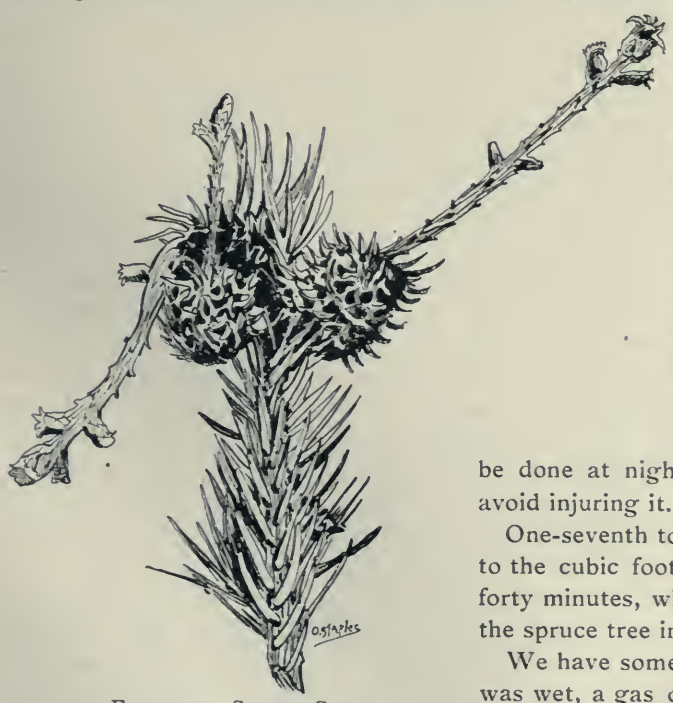

FIG. 2392. SPRUCE GALLS.

One-seventh to one-sixth of a grain of cyanide to the cubic foot, enclosed with an exposure of forty minutes, will kill the lice without affecting the spruce tree injuriously.

We have some cases of injury where the foliage was wet, a gas of greater strength used, or the work done during the heat of the day.

QUALITY AND THE MARKET

EDUCATE THE TASTE—WHET THE APPETITE BY GIVING HIGHEST QUALITY—PRODUCTIVENESS SECONDARY—FROM AN ADDRESS BEFORE AMERICAN POMOLOGICAL SOCIETY

BY

CHAS. W. GARFIELD

GRAND RAPIDS, MICH.

A GREAT deal of friction can be avoided in this world by not attempting to bring all individuals with their varied likes and dislikes to the same standard or the same level. The bending of ways to suit the individual peculiarities and personal likings is distinctly in the interest of harmonious intercourse and friendly relationships. When it comes to matters of taste, there is no hard and fast rule with regard to excellence. Two people of equally good sense and wise discrimination and valuable experience may differ widely in their views with regard to the comparative quality of viands and each may be perfectly right. This is specially true when it comes to passing upon the merits of the different varieties of different fruits. A college president of wide travel and broad culture, who had tasted of the fruits of many countries, declared his opinion that a well ripened Concord suited his palate better than any other grape grown. A connoisseur and an old-time member of this society, when this fact was confided to him, laughed outright and said, "he never had tasted a perfect Iona. It will change his mind." Later in the same season our pomological friend sent to the college executive a basket of the best Concords and the best Ionas he could find, and to his great astonishment, the courteous letter of gratitude, which was sent in response, still insisted that the Concord was the better. He may have been right in spite of all the records of the American Pomological Society for aught I know, and I am not sure but the rank and file of people who eat grapes would support him in his opinion. It is the province of the commercial fruit grower not to antagonize individual tastes, but rather to cater to them in the greatest possible detail and make the purchaser pay well for the gratification of his peculiar tastes. The fruit grower who is in the business for money ought to be willing—for a proper consideration—to humor these peculiarities.

It is in catering to this variety of taste and the difference in judgment concerning the quality of fruits that we find the stimulus for the originator of new and valuable varieties. The growers of fruits are very few in number compared with the consumers, and there is no reason why a single grower should not in the management of his business cater to the tastes of a considerable range of consumers. The fact that there are so many variations in taste and people are so willing to make sacrifices and even pay roundly to suit their likings, is to my mind sufficient reason for putting together in juxtaposition the two prominent words in my talk.

When an originator of fruits heralds with considerable blandishment a new candidate for popular favor, saying, "The tree is a fine grower, hardy in twig and bud, the fruit is of fine color, firm texture, fair quali-

ty and a good shipper," I always question the real, intrinsic value of his new production. "Fair quality" in an advertisement of this kind usually means poor quality. It is a notch lower than any of the three descriptions given by Downing to fruits worthy of mention, namely, good, very good, best. A fruit that does not come up to Downing's lowest is not worthy of dissemination, and there are a good many of the newer candidates advertised and foisted upon the innocent public with great emphasis placed upon their shipping qualities which are unworthy of any place in our catalogues, simply because they are not good enough to eat.

We are constantly expressing our disappointment because our northern fruits take second place whenever some tropical species comes into the market. We regret that people eat oranges, bananas and breadfruit, neglecting our beautiful northern apples, and still, in the face of our discomfiture, we magnify the attributes of such apples as the Baldwin and the Ben Davis because they can be shipped long distances and not be materially injured or bruised by severe handling. Then we expect people to like this class of fruit when placed alongside of the most delicate southern varieties that are shipped to us with the utmost care in packing. People eat Baldwin apples and then say they are not very particularly fond of apples anyway, when, if their tastes could be satisfied by presenting fruit of the quality of the Jonathan or of the Melon, there would be an increased demand for the apple. We flood the market with plums and expect people to buy them, expressing our wonder that so many people should say, "Well, we do not care so very much for plums. Somehow our people have lost their taste for them." The responsibility for this lack of demand lies in the fact that the quality of the fruit is too poor to be attractive to people. There will always be a demand for the finer classes of plums if they can be found upon the market.

If we expect people to like peaches we must not fill them up at the beginning of the season with varieties so entirely lacking in quality as the Alexander class. You must so satisfy the palate as to compel people to increase their wants because you have whetted their appetites.

It is eminently desirable, from the standpoint of the grower, that the people should eat and use more pears, and we say to them, "The pear is an excellent fruit, a healthful fruit, and you ought to consume large quantities of it," and after saying this we hunt through the catalogue to find some variety that we can grow the cheapest and that we can ship the longest distance, and then furnish the people with this kind of stock, at the same time suggesting to them that they ought to eat more pears. We cannot expect an increased demand for pears when we try to satisfy it with the Angouleme and Kieffer. I am willing to be classed as sentimental with regard to some things because I think sentiment has a very high value, but in this contention it is purely a matter of business. If we expect people to increase the consumption of our fruits we must furnish them the quality and the product that will be attractive to them. We must not only do this, but we must educate people so far as we can in their tastes so that they shall demand the best. This is in the interest of higher living and progressive agriculture. It will not do to be constantly excusing ourselves for not furnishing the highest quality of fruits or trying to make poor fruits seem pretty good. A single instance: The Ben Davis apple is not of such quality as to be attractive to one who has a keen discernment of quality in the apple family, and it does not make the matter any better to say to people that the Ben Davis in some localities is not so very bad a fruit and that it is pretty good when you cannot get anything else. It is not a very good advertisement for an apple to have it called for by a hotel man, for the reason that it remains on

the table for a long time and is an attractive feature.

The prime consideration, it seems to me, in the business of furnishing fine fruits for the people who depend upon the market for their product is good quality. Having perfected this type, then look after its productiveness and its adaptibility to a wide range conditions, but always demand a sum that will cover added expenses, and support the demand with the fact that the quality of the fruit warrants it. There is another point that I would like to make in connection with fruit culture, and it will not appeal to extensive orchardists. There are a great many small growers who are willing to put time and care into the growing of a high quality of fruit if in their limited marketing they can find a demand for these high grade fruits at a price that will warrant them in the added expense of growing. In this field there is opportunity for the highest intelligence in fruit growing, and it has attractions that cannot be found in a more extensive business. There is opportunity here for a remunerative business, and one that will give the keenest satisfaction. A friend of mine riding with me the other day, noticed that I bowed to a gentleman in a market wagon and asked me who it was. I said, "That is Mr. P——, and she said, "Oh, he is the man who grows those beautiful Jonathan apples we get every year." I said "Yes, he takes a great deal of pains, putting an excellent product upon the market," and she said, "I always get my apples from him because I know they will always be of the highest quality, well selected and carefully handled, and I am willing to pay what he asks, even if the price does seem high. I can afford to pay his prices, because in using his fruit I have no waste." This is the kind of reputation upon which to build a remunerative business in the growing of fruit, and this is the level of fruit growing to which I would like to see the average of our cultivators trending.

BARRELS OR BOXES

The evidence with reference to barrels and boxes appears to be somewhat conflicting. Garcia, Jacobs & Co., London, write that the packing of apples in boxes entails so many incidental expenses that such goods cannot compete with similar fruit packed in barrels. On the other hand, Mr. R. H. Moir and R. T. Polleck, two Glasgow fruit merchants, who handle a very large quantity of fruit retail, say that they prefer boxes and small packages and offer as an explanation of contra opinion of the commission men, the statement that more goods would be handled without passing through the hands of the middle man if the packages were smaller.

SEPTEMBER NOTES

BY

WM. HUNT

GUELPH, ONT.

TENDER PLANTS.—All tender greenhouse and window plants that are required for winter decorative purposes or for beautifying the garden next season will have to be closely watched if they are still out of doors, so as to prevent unpleasant and damaging surprises by early frost. Stock plants or cuttings of coleus, heliotrope, achyranthes, salvias and ageratum should be at once secured if not already attended to, as these plants are susceptible to cold, chilly weather and are easily damaged by the slightest frost. Petunias, verbenas and geraniums being of a hardier nature may perhaps be safe until about the end of the month, but it is always well to be on the safe side and secure a stock of cuttings or plants before they are damaged by frost. Plant growth that has been frozen only very slightly is often difficult to propagate, even if the growth does not appear to have been damaged. Begonias, cactus, calla lilies, agaves and all plants of a similar tender nature should be taken indoors when chilly, cold weather prevails. Palms, cordylines, oleanders, hydrangeas and even aspidistras may perhaps be left outside until toward the end of the month, at least in the day time. Fresh air and a fair amount of sunshine out of doors is much better for plants than the close dry atmosphere of a dwelling house, or the super-heated temperature of a greenhouse at this season of the year, as long as the plants are safe from frost. The temporary protection of a sash and frame, or even the protection afforded by a verandah, or some light covering placed over plants for a few nights, will often extend their period of out door life for several weeks at this season of the year, as it is seldom that early frosts prolong their visits beyond one or two nights.

Chrysanthemums.—Although these plants are almost hardy, they must not be exposed to frost, or even to continued cold wet weather, if good flowering results are to be obtained. Where only one or two are grown in pots for the window they can be lifted

under cover for the night and set out of doors again in the morning. If the plants are put into the greenhouse or even into frames, they must be given plenty of air and water, especially on warm sunny days. Syringing, or sprinkling the foliage early in the day on hot days, will also benefit them materially. Disbudding will also soon have to be attended to with chrysanthemums. This is done by picking off with the thumb and finger all the lower buds as soon as they are about the size of small peas, leaving only one or perhaps two of the top or terminal buds at the top of each branch or stem. By taking off these lateral buds, fewer but very much larger flowers are obtained than if all the buds were left to mature. As soon as the buds are formed on the plants liquid manure should be given them about once a week until the flowers are fully developed. Tobacco water or fumigating with tobacco are the most effectual remedies for the attacks of black or green fly on chrysanthemums. The black fly is oftentimes very persistent in its attacks, and close watch will have to be kept to prevent its appearance. As tobacco stems or the raw leaf of tobacco is sometimes difficult to obtain, a good substitute can be found by using a cheap cigar for making tobacco water or for fumigating plants with. By pouring about a quart of boiling water on a cigar after it has been unrolled, sufficient tobacco water can be obtained to sprinkle a number of plants with. The solution must be allowed to cool before using. If any of the tobacco water is left over it can be kept a long time in a bottle tightly corked. Start with the tobacco solution before the plants are badly infested, as, if the aphis or fly once gets into the flowers, they cannot be eradicated without injuring the blossoms.

Roman Hyacinths.—If the beautiful white sweet scented spikes of these early flowering hyacinths are wanted for Christmas time the bulbs should be secured and potted as early as it is possible to get them. By planting two or three bulbs in a four or five inch pot early in September and plunging the pot outside in ashes or sand—or even sandy soil—until the bulbs have made good root, which will be in three or four weeks, and then placing the pot in the window or greenhouse, these useful winter flowering bulbs can be had in flower even before Christmas if required. Plant the bulbs about half an inch under the surface of the soil so that the tops of the bulbs are well covered, water them well once and then plunge or bury the pot in an upright position until the bulbs are well rooted and you will be rewarded by a nice pot of sweet-scented flowers for your trouble. The soil in the pot should never be allowed to get quite dry whilst the plant is growing and when in flower. The pink and blue varieties of the Roman Hyacinths are very pretty, but not as early or as easily grown. By potting a few of these bulbs every two or three weeks until November or even later, a succession of their beautiful blooms may be had until quite late in the spring. These later planted bulbs must, however, be covered with ashes or soil in a cool cellar or shed, or in a box or frame out of doors where they can be covered and protected from severe frosts whilst making roots as before mentioned.

Cannas.—As soon as the first frosts have touched the foliage of cannas the stalks should be cut off about six or eight inches above the ground. The roots should then be dug up entire with a little earth adhering to them and placed in a dry shed or barn for a week or two where frost cannot reach them. Before severe frosts they should be placed in a fairly dry warm cellar, or laid under the benches in a greenhouse, where there is very little moisture to drip on them. A temperature of about 40° or 45° suits them very well when dormant in winter.

Dahlias.—These should be treated much in the same way as recommended for cannas,

with the exception that the dahlia roots will keep well in a slightly lower temperature. Packing the roots in dry sand in a cool, dry cellar is probably the best method of wintering dahlia roots. The sand will prevent the tubers from becoming too dry, as this latter condition is almost as dangerous to dahlia roots in winter as an excess of heat and moisture. Dry the dahlia roots fairly well before stowing them away finally for the winter.

THE RAMBLER ROSES

BY

T. H. RACE, MITCHELL

A WIRE FENCE COVERED WITH CRIMSON RAMBLER ROSES AT MR. AMBROSE PETTIT'S

FIG. 2394.

READERS of The Horticulturist were very much interested in the description of the Crimson Rambler rose hedge in last month's issue. The sight described on the farm of Mr. Ambrose Pettit must have been a very beautiful one. But let me add that handsome as the Crimson Rambler is the Pink Rambler is not to be despised or overlooked.

I had a small cluster of Pink Ramblers on my grounds this season that was very much admired and attracted quite as much attention as the crimsons. The pink blooms about two weeks earlier than the crimson, and its individual blooms are not so double or heavy, but its clusters are more numerous, and when fully out the effect is very fine. I intend to plant it in a hedge, in alternate order with the crimson, three feet apart, and intermingle the shoots in such a way as to have a continuous hedge of both, or each in its blooming season. By that plan I hope to double the length of the season in which my hedge will be in bloom, first in pink then in crimson. And for real beauty I would not say that the last stage would be prettier than the first.

THE TRAILING ARBUTUS

(EPIGEA REPENS.)

COMMON NAMES: TRAILING ARBUTUS, GROUND LAUREL, MAYFLOWER

BY

MRS. A. GILCHRIST

TORONTO JUNCTION

This many-named plant belongs to the royal order of plants Ericaceae, or true Heath family. It is found on sandy soil, especially in the shade of pines, and is common with us near Toronto, but in many parts of the country it is quite unknown.

There are but two species, our own Epigea Repens, and one in Japan called Asiatica, not yet in cultivation. In New England it is the most popular of all the native flowers, and is known as the May flower, while the Mayflower of English history and literature is the Hawthorn. Then many people give the Hepatica the name Mayflower; indeed, if you go into one hundred schools in our province and ask the boys and girls what is the first native flower they may expect to find in the spring, ninety-nine will tell you that it is the Mayflower, by which they mean the Hepatica. No one more dearly loves our common English or local names than I do, but sometimes local names are most conflicting, and in teaching the young it is just as easy for them to know the plants and flowers by their proper names, for the common name often means a different plant altogether. But I am wandering away from our sweet, wee Arbutus, a flower which is worthy of a place in every garden. It has been called one of the most exquisite of nature's fondlings, a gem worthy of a rare setting. The reader will have little difficulty in locating it, even if it may be covered with leaves, for its perfume is of such a sweet peculiar fragrance. Its leaves are evergreen, glossy above; if the winter has been severe you will sometimes find the leaves injured and of a russet brown color. The flowers are of two kinds; the female flower being large and white, while the male flower is smaller and pink or somewhat rosy in color. The question is often asked, Can the Arbutus be cultivated in the garden? Certainly, if properly lifted and cared for, but is like all the rest of its family, a little difficult to transplant. Try and secure small, young plants, lift them with a good ball of earth, be careful not to injure the roots, replant in a shaded position, protect in winter with leaves, as nature does, and you may expect to succeed. But, like the thrush, it belongs to the woods by inheritance. We quite frequently find it in bloom before the first of May, it depends on the season. In going through the woods I find the buds showing now, the first week in April, yet they may not be fully developed for some time. In the words of Longfellow:

"And with childlike credulous affection
We behold the tender buds expand,
Emblems of our own great resurrection,
Emblems of the bright and better land."

THE YELLOW DAY LILY

(HEMEROCALIS FLAVA)

BY THE EDITOR.

FIG. 2394. YELLOW DAY LILY.

IN a large collection of Hardy Perennials set at Maplehurst last spring were six of these Day Lilies, and though this variety is by no means uncommon, yet it at once arrests the attention of the passer by, with the pure yellow color of its petals. The flower is well called Day Lily, each bloom is so short lived, but other flowers so rapidly replace the faded ones, that one scarcely observes this characteristic.

The flower is orange yellow (flava) very erect and very fragrant. It came into bloom this season about the 6th of June, and the cutting for the photograph was made on 10th of June.

The plant is a native of South Europe, Western Siberia and Japan, and was introduced into England in 1596. There are several species of Hemerocalis, but this one seems to be the general favorite. We notice a reference to this lily in the two leading horticultural journals of recent years, both of which we regret to say are now discontinued. The first from "The Garden" and English journal: H. flava is one of the best of the bold herbaceous plants flowering throughout June, when its rich yellow, trumpet shaped blossoms are appearing day by day, and though not lasting long individually, the profusion is so great that the waning blossoms are not missed. Always a vigorous subject it should be planted only in such company, or in a group where its presence will not interfere with things more frail. Besides being a border plant, it is also most useful for early forcing in pots and greenhouses. The second from "Garden and Forest" of New York city: Near a group of white peonies, or a group of grey, blue or purple varieties of garden Irises, no combination can be more beautiful. All it wants is room, food and sunshine to make a most magnificent display. A large vase, filled with a mass of these long-stemmed flowers, makes a really imposing display.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters whic. i is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in Januarv, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

REPORT OF FRUIT INSTITUTES HELD IN PRINCE EDWARD COUNTY

BY E. LICK, OSHAWA, DOMINION FRUIT INSPECTOR

THE fruit interests of this county are very large. Owing to the peculiar form and varied character of the soil, together with the proximity of water, there is perhaps no part of the Province of Ontario better situated for the production of apples.

The special mission of this series of meetings was to illustrate thinning, and talk about packing and the Fruit Marks Act. At many of the meetings the growing of fruit came in for a share of the time. Fifteen meetings were held in all, beginning at Albury on the north side of the county, and ending at Consecon at the west end. The meetings were held in the forenoon and afternoon, except in the case of one day, when only an afternoon meeting was held.

The first meeting, at Mr. S. Dempsey's, was most largely attended, fifty or sixty being present. The attendance at most of the other meetings was from twelve to twenty. Mr. Lick had the assistance of Mr. Carey, of Cobourg, and later Prof. Lochhead, of Guelph. It was to be regretted that many were detained from attending by backward haying and ripe rye or fall wheat.

Among the important points emphasized were the following, viz :

1. The importance of cleanliness and care of the orchard.

2. The necessity of thinning, if best fruit is to be obtained. This point was well illustrated at Mr. John Laird's orchard, Picton. Mr. Laird thinned Duchess some weeks before, and a very great improvement in size could be noticed.

3. The desirability of whole sections devoting their energies along certain lines, such as apple growing, dairying, etc., was clearly brought out.

4. The necessity of spraying if scab is to be overcome, was never so clearly shown than in the case of Albert MacDonald, Consecon, who said: "I have lost $1,000 by not spraying."

The question of insects was handled by Prof. Lochhead in a very helpful way. The Fruit Marks Act and packing of apples for sale was of great interest at nearly every meeting. Many expressions of regret that farmers could not attend were heard and universal approval of this practical way of reaching the fruit growers.

FRUIT GROWING ON ST. JOSEPH AND MANITOULIN ISLANDS

BY PROF. W. LOCHHEAD, AGRICULTURAL COLLEGE, GUELPH.

PROF. LOCHHEAD having been sent out by the Superintendent of Farmers' Institutes to meetings at Manitoulin and St. Joseph Islands, writes to Mr. Creelman a newsy letter in reference to the agricultural and horticultural conditions of these islands. Mr. Creelman sends us an extract from that portion of Prof. Lochhead's letter dealing with fruit growing particularly.

"I have been making this hotel my headquarters for three days. Ever since coming from Manitawaning, I have been making excursions to various parts to get information regarding the capabilities of St. Joseph's Island. My opinion of St. Joe has to a large extent changed since I came here. I had the idea that the soil and rock were very much like those of the Grand Manitoulin, but such is not the case. Although the underlying rocks are probably the same—Silurian limestone—yet the soil and subsoil have great depth. In fact, I have nowhere seen an exposure thus far in my travels. In Manitoulin the great fires had burnt away everything of a vegetable nature in the soil, and left it blue or white. Here, however, there is as a rule much humus in the soil. In many places and on large areas, too, the clay is cold and heavy, and in other places the soil is quite sandy.

"I visited several farms. I saw splendid crops of peas, although they tell me this is an off year on clay land for peas, an account of the wet May and April. Oats, wheat and barley look well and give evidence of an abundant crop.

"From what I can gather this island is quite suitable for fruit growing. I saw admirable yields of apples, Duchess and Alexander among the early varieties, and Longfield, Yellow Transparent and Wealthy as early winter apples. The Japan plums, Burbank and Abundance and Ogon, are quite hardy and are great bearers, with Mr. Chas. Young, of Richards Landing. To show how fruit growing may be made lucrative Mr. Young tells me that he got $65 for the strawberries he sold from a patch not one-fifth acre in extent (after taking all he wanted for his own use). He got 10 cents a box at the 'Soo'. The 'Soo' is the ready market for all produce grown in St. Joe."

Question Drawer

Black Knot on Cherry and Plum.

1302. SIR,—Would you kindly inform me if spraying the trees with Bordeaux mixture is effectual, not only in keeping down but also in getting rid of the Knot until they are again affected by other trees. Also, how early should the spraying be commenced, and how often repeated?

Listowel. A. J. COLLINS.

Reply by Prof. Lochhead, O. A. C., Guelph, Ont.:

It is quite within the power of the fruit grower not only to control but also to prevent the spread of the Black Knot. If careful spraying with Bordeaux mixture (4-4-40 formula) is carried on regularly the Knots will gradually disappear by breaking off. The disease is more profitably controlled by cutting off diseased parts and burning them in early spring, and by spraying with the Bordeaux twice or thrice in spring and summer (such is necessary for the prevention of the *brown rot* and the *shot hole fungus*). In districts where the Black Knot was formerly very injurious, but where cutting and spraying have been adopted, the disease has practically disappeared.

The best times to spray are: (1) When leaf buds are opening; (2) When fruit is formed; (3) Two weeks later. The spores of the Black Knot are mainly set free in early spring and in June, consequently the Bordeaux should be applied at these times at any rate to kill the germinating spores.

Lecanium Scale on Japanese Honeysuckle.

1303. SIR,—I enclose you some twigs of my Japan honeysuckle affected with some kind of scale. Could you tell me what it is?

A SUBSCRIBER.

Reply by Prof. Lochhead, O.A.C., Guelph, Ont.:

The dark brown scales on the Japanese honeysuckle sent me are Lecanium Scale Insects. Similar scales are often found in both greenhouse and orchard plants. As a rule they lay eggs, are but single-brooded, and pass the winter in the half-grown condition. On cherry there is the cherry scale (Lecanium Cerasifex); on blackberries at Trenton last year the blackberry scale (Lecanium Fitchi); on greenhouse lemons, etc., the Lecanium Hesperidum; on currants the currant scale (Lecanium Ribis); on peach, maple, etc., the peach Lecanium (L. Nigrofasciatum); and on plums the New York plum scale (Lecanium Prunusatri). With the last named scale, the young pass the winter on the twigs, and begin to move in April to new feeding grounds on the newer twigs. Before the end of June these become full-grown, and begin egg-laying. In early August the young lice emerge from the eggs and crawl out on the leaves. In September they migrate back to the twigs, where they are to be found in winter clustered in rows on the under surface.

The life-history of the honeysuckle scale will likely be somewhat similar to that of the New York plum scale.

Millipedes Eating Strawberries.

1304. SIR,—Can you give me a remedy for the small brownish wire-worm that eats strawberries?

I do not mean the soft white grub that eats the plant, but the harder and smaller insect that eats the fruit itself.

By doing so, you would greatly oblige.

Montreal. COLIN D. MORGAN.

Reply by Prof. Lochhead, O.A.C., Guelph, Ont.:

The hard, wiry, worm-like creatures which you send me are **millipedes**, and are sometimes mistaken for **wire-worms.** In England, they are often called "False Wire-worms," and with us "Galley-worms." They do not belong to the insects, but to the Myriapods. They never have wings,

and differ little in appearance throughout their lives. When at rest they coil their bodies. They are omnivorous feeders. Sometimes their food consists of grubs, worms and slugs; and sometimes such cultivated plants as mangolds, potatoes, cabbage roots, and even the roots of cereals Once in a while we hear of them eating ears of Indian corn and strawberries. The eggs are laid in holes in the ground in the spring, and it is possible that the adults are carried from one place to another in mulches and manures.

Many remedies have been tried. Traps are possibly as practicable as any. Poisoned baits of bran or potatoes, or mangolds have been used to advantage.

A dressing of fresh gas-lime to the soil has been recommended.

Thorough cultivation of the land, and clean farming, by the removal of old rotten roots and rubbish, will also pay where the land becomes infested.

Killing Mustard By Spraying.

1305. SIR,—I saw an item in the press about some man teaching the farmers how to kill wild mustard by spraying it with some chemical solution. Can you give me the formula?

A SUBSCRIBER AT LONDON.

Recent experiments, carried on first in France, then in England, and latterly in Canada, both at the Dominion Experimental Farm, Ottawa, and at the Ontario Agricultural College, Guelph. show conclusively that growing wild mustard (Brassica sinapistrum) can be killed by spraying the plants with a two per cent. solution of copper sulphate or bluestone—one pound of bluestone being dissolved in 5 gallons of water.

With an ordinary spray pump the infested plots may be sprayed. A fine nozzle should be used, and the application made on a clear day in June, just as the mustard is coming into bloom. If applied carefully, the bluestone solution will not harm crops of oats, barley or wheat, in which the mustard is growing. In cases of severe infestation, where hand pulling is clearly out of the question, this method of spraying should come quickly into general use; for, although the mustard seeds in the ground are untouched, the plants which come up are prevented from re-seeding the ground. It becomes, then, merely a question of a few years before a badly infested plot becomes clean, if the plants are sprayed annually.

W. LOCHHEAD.

O.A.C., Guelph, Aug. 2nd, 1902.

Open Letters

The Elm as a Shade Tree.

SIR,—Fifty years ago at a meeting of the Horticultural Society of New York, a Mr. Stephen Ainsworth, a fruit grower south of Rochester, arose and said, "Fellow fruit growers plant trees as beginners that will bear grief well." It is one of the best speeches I ever heard at a meeting of horticulturists. It was very brief, but full of meat for digestion and consideration. Mr. A. McNeil in your August number calls attention to the American Elm as a shade and ornamental tree. It is beautiful, majestic, hardy, attains great size, is as free as any from insects, worms and other pests, holds its foliage well, the best shade tree in America, will branch high and therefore not darken front windows, will form a lofty arch over the street if planted on both sides.

And over and above all it bears grief well.

In this respect it has no equal. It is a very long lived tree and when a man has planted an elm and protected it until it has been well established, he may rest assured that it will give shade to many generations after he has passed away.

FRANCIS WAYLAND GLEN.

Notes from the Horticultural Societies

New Horticultural Society Formed.—Mr. Frank J. Barber, of Georgetown, writes us as follows: I beg to report that on the 2nd ult., a horticultural society was formed in Georgetown with very bright prospects. A good membership has already been secured and a progressive Board of Directors appointed. The following is the list of officers:

President, Mr. John R. Barber; 1st vice-pres., Dr. Wm. T. Roe; 2nd vice-pres., Miss Young; sec.-treas., Frank J. Barber.

We are arranging for our first public meeting this fall. (Sgd.) Frank J. Barber, secretary.

We are glad to note advancement in horticultural work. Besides the formation of Local Fruit Growers' Associations throughout the agricultural districts of the province, the towns are taking a great interest in horticultural work. Besides floriculture, which has always attracted considerable attention from amateurs and practical florists, many citizens and their families are becoming interested in horticultural study.

One line of horticultural work that has become quite prominent and is being fostered and encouraged by the horticultural societies is the improvement of parks and private residences in towns and cities. This is doing much to increase the value of property in these towns. Our horticultural soeieties are taking hold of this work in enhancing the general appearance and beauty of urban localities. It will be noticed that the organ of the Provincial Fruit Growers' Association, the Canadian Horticulturist, has been giving attention to this branch of horticulture in its article on "The Home Beautiful."

Advancement along more practical lines of horticultural work is illustrated in the following report of the Port Elgin Branch of the Lake Huron Fruit Growers' Association:

"We held a monthly meeting on May 31st and considering the busy time of the year, had a very good attendance. The topic of the meeting was 'Insects Injurions to Plant Life.' It was taken up by Mr. James Muir, who handled the subject to perfection. After the reading of the paper a discussion, which was very interesting, took place on this subject.

"It was decided to hold our meetings on the last Saturday of every month at 3 p.m. Our president, Mr. Wm. George, was appointed delegate to the district meeting in Hanover, on June 11th. There seems to be an increased interest taken in all the meetings and good results are expected in the working of the association in this district."

(Sgd.) W. A. Mitchell, Secretary.

Our Book Table.

FORESTRY OF MINNESOTA, by Samuel B. Green, Professor of Horticulture, the University of Minnesota, published by the Geological and Natural History Society of Minnesota, 1902. Second edition, postpaid, 37 cents.

This is one of the finest publications we know, on forestry. It is full of interest from beginning to end, a book of nearly 400 pages, in cloth. Part I deals with such subjects as The Tree, The Forest, Forest Influence, Propagation, Nursery Practice, Forest Protection, Forest Mensuration, Wood and it uses, etc. Part 2 with the Trees of Minnesota, which are much the same as those of Ontario.

IRRIGATION FARMING. A handbook for the practical application of water in the production of crops; by Lute Wilcox. New edition, revised, enlarged and rewritten. Since the publication of the first edition of "Irrigation Farming," six years since, so many important improvements in irrigation have been made, and new and better methods introduced, that in order to keep abreast with the times a new edition of this standard work has become a necessity. Realizing this need, the author has prepared the present volume, which has been largely rewritten, entirely reset, and considerably enlarged so as to present in systematic sequence and concise form everything pertaining to the most modern irrigation methods and means, thus making it the most complete manual on the subject ever published. As the author has devoted the greater portion of his life to practical irrigation work, and is the recognized authority on the whole subject of irrigation, from a practical standpoint, every statement made in this book is based on the best experience, practice and science, and may be unhesitatingly relied upon as absolutely true. The

volume is profusely, handsomely and practically illustrated, and in paper, presswork and binding all that could be desired. Over five hundred pages, five by seven inches; cloth. Postpaid, $2.

IRRIGATION METHODS. A timely up-to-date book on the practical application of the new methods for destroying insects with hydrocyanic acid gas and carbon bisulphid, the most powerful insecticides ever discovered; by Willis G. Johnson, formerly professor of entomology and invertebrate zoology at the Maryland Agricultural College and State Entomologist, author of many special reports on economic topics, and associate editor American Agriculturist weeklies. An indispensable book for farmers, fruit growers, nurserymen, gardeners, florists, millers, grain dealers, transportation companies, college and experiment workers, etc. Nothing of the kind has ever been printed before. It embodies years of careful research and practical application by the author, as well as the tests and experiences of others from all parts of the world. The fruit, nursery, floral and grain industries are confronted on every side with hordes of insect pests which threaten their very foundation. This important work tells just what to use and how to apply it to save serious losses from insects. The author has presented his subject in a popular style, free from technicalities. Specific and minute directions are given for making and applying hydrocyanic acid gas from every standpoint. The physiological effects upon animal and plant life are fully illustrated and discussed. Six chapters are devoted to orchard fumigation, including the construction and management of all kinds of apparatus devised and successfully used. In three chapters on nursery fumigation, the construction, management and methods of preparing young trees for treatment are given. The destruction of insects in greenhouses, mills, elevators, granaries, dwellings, ships, cars and other enclosures can be easily and cheaply accomplished by following the directions given. Other chapters contain the opinions and methods of experts from every part of the world where the gas is used. The regulations of foreign governments regarding the importation of American plants, trees and fruits are described. A most useful part is devoted to the use of carbon bisulphid for the destruction of animal life below the surface of the ground, stored grain or other materials, and in places where hydrocyanic acid gas cannot be used. Illustrated; five by seven inches; three hundred and ninety-one pages. Cloth, $1.50.

CATALOGUES.

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SPRAYING PAYS

IN a year like the present when the conditions are commonly known as rather adverse, favorable opportunities arise of testing many of the principles or orchard practice. For example, in the early part of the season we have had a great deal of rain, and spraying operations were frequently interrupted and in many cases entirely prevented. As the season advanced the weather was very moist, and consequently conditions for the development of fungous diseases very favorable. It is not to be wondered at, therefore, that many reports are coming in from different parts of the province saying that apple scab, mildew, grape rot, etc., are very prevalent. However, under these most unfavorable conditions we find cases where spraying was thoroughly carried on and the rot almost entirely eliminated from the orchard. Frequent reports have come in where the entire crops of plums have been lost through the plum rot. Last week, in travelling through the Niagara district, we visited the orchard of Mr. E. D. Smith, Winona, and found that by thorough spraying his trees were hanging with a splendid crop of fruit. On a considerable portion of his orchard the fruit had been thinned so that it did not touch, and where this was done the trees were entirely free from rot. However, even on unthinned trees which had been thoroughly sprayed very few rotten plums could be found, although the fruit was so thick that the plums were touching one another and crowded closely together. A couple of trees which were left unsprayed lost their entire crop through the rot. An instance of this kind affords a striking illustration of the value of spraying.

BOOKS FOR FRUIT GROWERS.

FRUIT, FLOWERS, ETC.

Apple Culture, Field Notes on. Bailey. ...$0.75
Bulbs and Tuberous Rooted Plants. C. L. Allen.. ..... 1.50
Bush Fruits Prof A. Card 1.50
Chrysanthemum Culture. Morton. Cloth.. 1.00
Chrysanthemums, How to Grow..... .25
Cider Makers' Handbook. Trowbridge..... 1.00
Cranberries, Cape Cod. James Webb. Paper ..... .40
Cranberry Culture. White..... 1.00
Crops, Spraying. Clarence M. Weed..... .25
Dahlia, The. Lawrence K. Peacock..... .30
Floriculture, Practical. Peter Henderson... 1.50
Florida Fruits, and How to Raise Them. Harcourt 1.25
Flower Garden, Beautiful. Matthews ..... .40
Fruit Culturist, American. Thomas 2.50
Fruit Grower, Practical. Maynard..... .50
Fruit Harvesting, Marketing, etc. F. A. Waugh..... 1.00
Fruit, The. P. Barry..... 1.50
Fumigation Methods. Willis G. Johnson... 1.50
Fungi and Fungicides. Clarence M. Weed. Cloth $1.00, paper ..... .50
Garden Making. Prof. L. H. Bailey 1.00
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Grape Grower's Guide. Charlton..... .75
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Greenhouse Construction. Prof. L. R. Taft. 1.50
Greenhouse Management. Prof. L. R. Taft. 1.50
Horticulture, Annals of. Prof. L. H. Bailey. 1.00
Horticulturist's Rule Book. Prof. L. H. Bailey ..... .75
House Plants and How to Succeed with Them. Lizzie Page Hillhouse..... 1.00
Insects Injurious to Fruits. Saunders 2.00
Irrigation Farming. L. M. Wilcox..... 2.00
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Plums and Plum Culture. F. A. Waugh.... 1.50
Principles of Fruit Growing. Prof. L. H. Bailey... ..... 1.25
Pruning Book, The. Prof. L. H. Bailey.... 1.50
Quince Culture. W. W. Meech..... 1.00
Rose, The. Its Cultivation, Varieties, etc. H. B. Ellwanger..... 1.25
Rose, Parsons on the..... 1.00
Small Fruit Culturist. A. S. Fuller..... 1.00
Spraying of Plants. The. E. G. Lodeman.. 1.00
Strawberry, The A B C of the. T. B. Terry A. I. Root..... .50
Strawberry Culturist. A. S. Fuller. Illustrated ..... .25
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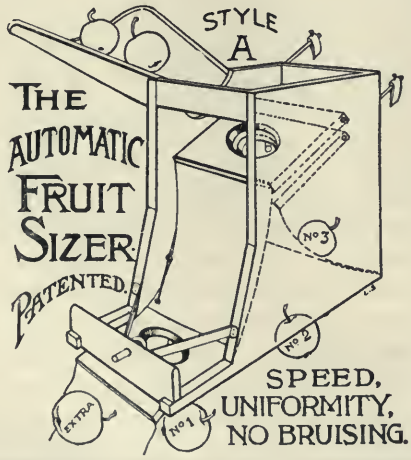

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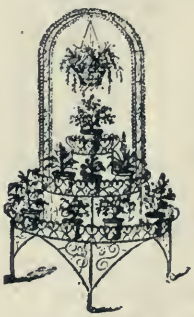

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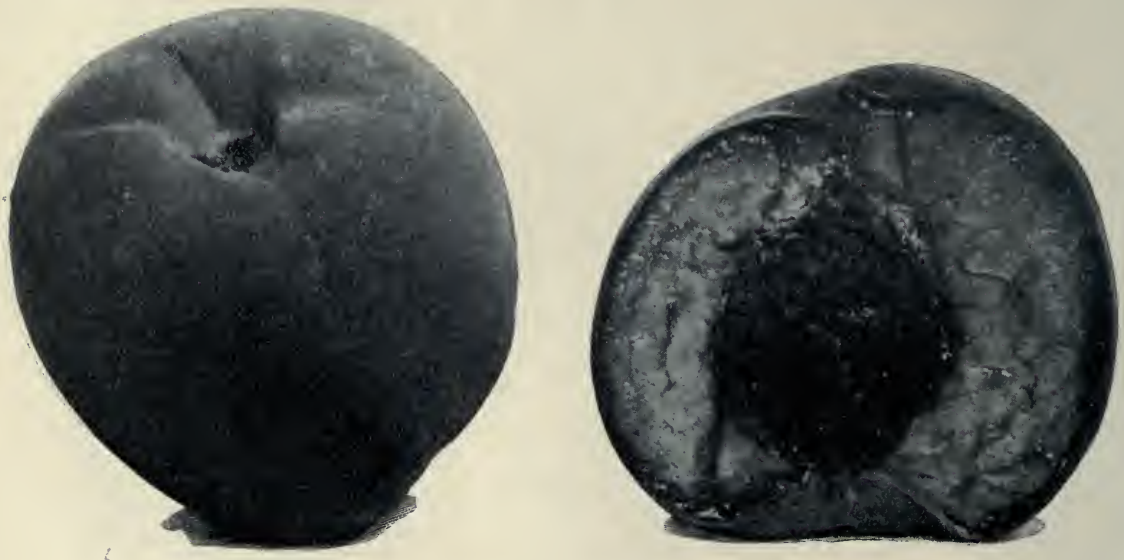

Fig. 2395. The St. John Peach.

THE
CANADIAN HORTICULTURIST

OCTOBER, 1902

VOLUME XXV NUMBER 10

ST. JOHN PEACH

THE earliest really good peach for either home use or market. Its season is the end of August, just before the Early Crawford; and its fair size, yellow flesh, attractive skin, and good quality, make it one of the most satisfactory peaches for all purposes.

Origin.—America.

Tree.—Vigorous, and productive.

Fruit.—Round, large, 2½ x 2½ inches; skin yellow, with dark red cheek; suture traceable on one side, sometimes by a red line; apex a tiny point in a rather deep depression; freestone; flesh, yellow, tinted red at stone; juicy, sweet, rich and agreeable.

Season.—August 20th to September 1st.

Quality.—Dessert and cooking, very good.

Market.—1st class, the best of its season.

Notes and Comments

SUCCESSFUL FRUIT GROWING.

THE lesson of successful fruit growing must be learned slowly; and many a purchaser of a fruit farm is sadly disappointed when he learns that the varieties of fruit upon it are a more important consideration than the number of trees. This season, for example, the Astracan apple has been a complete glut in our Canadian market, and being too tender for foreign shipment without great risk, it has sold at such low prices as to leave the grower a loss of money after labor, packages, freight, commission, etc., has been paid for; a similar statement may be made of the whole list of early clingstone peaches, such as Alexander, Hale, Rivers and Triumph. Fancy 10 and 15 cents a basket out of which to pay all expenses! What is left we ask for the grower? Nobody wants such rubbish. But as soon as we begin harvesting a fine yellow freestone, such as Yellow St. John we find a demand at 75 to 80 cents a basket, and we feel encouraged at once.

We mention this to show the great importance to the intending fruit grower when

buying a fruit farm, or to the farmer who wishes to plant an orchard, of knowing what varieties are really desirable ; for it is evident that there are very many kinds which are only an encumbrance, and should be rooted out and burned.

It is with this end in view, to know desirable varieties and encourage the planting of them, that our fruit stations have been established ; and if our readers will be advised by the reports of their work, as published by the Department of Agriculture, it will save many costly mistakes, and they will not be misled by the gaudy colored plates and glib tongue of the peripatetic tree agent.

GREAT MARKETS OPENING.

THERE is no doubt whatever that the world is big enough to eat up all our fruit products, and rich enough to pay us good fair prices for them. Not only is Great Britain a grand distributing market for our products, but we have enquiries more or less direct from Germany, and South Africa for our fancy apples. It is reported that good apples are just now worth 12c. each in Capetown, and that a line of steamers, furnished with cold storage, will soon begin to run between Canada and South Africa. Why then should not we take advantage of such fine opportunities? Even Japan, China and Australia are opening up for us, and, with so many millions of mouths to satisfy, surely the time will never come when our good apples will go begging for buyers.

FANCY PRICES FOR FRUIT.

WHAT is a fruit tree worth any way? This question puzzles our great corporations when they come to buy land planted with an orchard, for there are as many different values set as there are men to make them. Some say an apple orchard is only an encumbrance, for it does not pay, and must need be pulled out to make way for something more valuable. Others want fancy prices for each tree. "How many baskets of Flemish Beauty pears do you think I took off that tree this year?" said Mr. W. M. Orr, of Fruitland. Well, it was a stout stocky tree, not so very large, and we guessed about ten. "No," he said, "Twenty, and last year it gave me more than that." What then is that pear tree worth, would you take $40 for it? "Perhaps I would, but I should hesitate." Well that would count up pretty fast per acre ; for you would have perhaps 100 trees on it, and that would make the trees alone worth $4000, aside from the land value !

"How many barrels of apples would you estimate in this apple orchard which I have recently purchased," said Mr. Orr. We walked through it ; the ground was a stiff clay, the trees, though thirty years planted, were low headed, and very stocky, and every tree loaded with clean beautiful apples. We guessed an average of about two barrels per tree, or about 200 barrels from the 100 trees, as a very modest estimate. Now apples this year are valued at $1.00 per barrel as they hang upon the tree, and the apple crop on this farm we estimated as being worth this year at least $100 per acre. What then is such an orchard itself worth? Surely $500 per acre is a very moderate estimate. But why should a man like Mr. Orr, who already has a large fruit farm, wish to add another ninety acres? "It was too good an offer to pass by," said Mr. Orr," "ninety acres, with fine buildings, for less than $4000 ! How could I resist the temptation, if only for speculation?"

THE VALUE OF OLD TREES.

THE above purchase was as signally low as another, along the same electric road, was high. Twelve acres about seven miles distant was sold in August last for $10,000! The value was not in the

orchard alone, though a fine peach orchard just of bearing age; nor in the location altogether, although that is one of the pleasantest, but largely in the grand old trees which were left from the primeval forest to shade the borders of the lawn and hide unsightly views. "It would take a life time," said the buyer, "to put such grand old trees about a home, and I would not buy a place bare of trees at any price." Why is it that the grand old oaks, maples and elms, monarchs of the forest, are so thoughtlessly destroyed by the farmers of Ontario? Is there no way of convincing them that in time these will add thousands of dollars to the selling value of their farms?

THE APPLE SITUATION TO-DAY

IS the heading of several columns in "The Sun," in which the editor says, "Taking the situation as a whole it looks as if good apples, not necessarily grade No. 1, should go between $1.00 and $1.50 in the orchard. They may go more, they are not likely to go less, and the probabilities are on the side of the growers." It is really a comfort to us growers to find one journal taking up our interests. The Official Crop Reporter, issued by the United States Department of Agriculture, in speaking of the conditions of the apple crop in the United States, says that of the States having four million trees and upwards in apples eleven report an improvement in condition during August, and all but six of the apple-growing States report conditions ranging from 7 to 32 points above their ten-year averages. The State Weather Bureau reports that the outlook in New York is for considerably less than an average yield of apples. Buyers are snapping up desirable apples throughout the western part of York State. A Kenyon man has sold 2,000 barrels of bulk apples at $2 a barrel; Albert Wood, Carlton, his orchard of 700 trees for $7,000; the Pratt estate, Carlton, gets $2.50 per barrel for firsts and seconds; an East Albion man, $2 for everything barrelable; I. Cooper of Carlton, $2,500 for a 9-acre orchard; several other orchards sold at from $2,000 to $3,000. The Illinois Orchard Co., of Kankakee, Ill., has sold the apples in two orchards for $11,500. These orchards total 125 acres, and are situated in Clay and Richland counties. The apples were of the Ben Davis and Jonathan varieties. On the other hand we read in the New York Fruit Journal such statements as the following:—"The talk that buyers are offering $2.50 per barrel is rot. The apple men, with few exceptions are not anxious to part with their money. We were talking with one grower to-day who expects 500 barrels, and he remarked that he 'hoped to get $1.00 for the fruit clear of the barrel.' This is not an exceptional case. The rank and file of our growers are beginning to wonder if they will be able to realize the above figure. Of course, the growers are talking short crop, hoping thereby to get the price started high.

We believe that the situation is one that calls for careful investigation before prices are made."

APPLES A BIG FAILURE IN ENGLAND.

ALL our foreign reports agree that the apple crop in Great Britain is an unusual failure, especially of colored or fancy fruit, so that the prices in England will be high. Already (September 2nd) sales are reported in Liverpool for fall apples at about $6.00 a barrel, and in Glasgow at $2.50 per bushel box! We have word of a syndicate in England, which is being formed for the purchase in Canada of high grade apples, packed in boxes, under high class brands. This is pointing in the right direction. We are tired of shipping fruit to commission men, who so often sacrifice it, and seem to care little for the intrests of the consignor, so long as they get their percentage.

If we could once establish such a reputation for our brands that we could bring the world's buyers to Ontario for their high class stock, we would be masters of the situation. No apples are finer than Ontario apples, either in color or flavor, and the whole world wants such fruit. Why then should we not supply that want?

ASTRACHANS EXPORTED SUCCESSFULLY.

IT seemed a considerable risk, our sending forward to Glasgow a car load of such tender apples as the Red Astrachan; the carrier cases cost us 22c. each delivered, and the freight and commission on a bushel of apples amounts to about 50c., so that in case of failure we might be in debt nearly $500, besides losing the fruit. It was therefore with some pleasure that we received the cable from the consignee saying that the fruit had arrived in perfect condition, and had netted us £90 at Grimsby! Pretty good for an apple that is wasting under the trees in Ontario! And still, even at home, there are ways of succeeding with them. Here, for example, is the way a writer in Green's Fruit Grower managed with them:

"So many early apples in sight, with help scarce and poor at that, how to handle them successfully was a problem. We used "fifth" baskets, discarding all inferior fruit. My wife and I attended to the grading and putting up, while the hired man did the gathering. The baskets were new and clean, cost 30 to 35 cents per dozen. The apples were handled one by one, and polished with a cotton cloth until they shone. When carefully graded and attractively put up fruit will seldom go begging for a market. I went only to private houses, and the best at that, and could readily find sale at good prices for fancy eating or cooking apples. I made the business honorable by fair dealing, and at each visit found ready customers. Knowing that I had the best to be found, I was not afraid or ashamed to step up like a man and ring the door bell of the finest residences. Why should I be ashamed? Husbandry was the labor that God first instituted and blessed, and its devotees are and ought to be the kings and queens of the realm. Well, it was slow work to put up fruit in that way, but I could sell at 15 to 25 cents per basket, and it paid. Others were offering apples by the bushel at the same prices that I was getting for "fifths" baskets, but it was the way of putting them up, I think, that gave me the advantage.

"The best grade of culls was either dried or made into cider. The dried apples would keep over and wait for a shorter supply, and the cider would make vinegar to be sold later on at good prices. The apples not fit for drying or cider were carefully gathered up and fed out, none being allowed to decay on the ground. Why? Well, I have been through orchards and seen the apples lying on the ground and decaying by the bushel. The worms were crawling out by hundreds and seeking a home somewhere else, and, rest assured, they are always heard from the following year."

THE APPLE SHORTAGE IN EUROPE.

MESSRS. WOODALL & CO., of Liverpool, always send us reliable reportsof foreign markets, and we have pleasure in quoting from their circular of August 1st, which encourages us to hope for good prices for our No. 1 stock, but very properly discourages the shipping of inferior stock.

"The crop in Great Britain is about the same as the season of 1901, which was a small one. The comparisons are shown in the following figures, bnt this year there are twenty-six more reports than in previous one.

	Over Average.	Average.	Under Average.
This year.....	12	98	184
Last year.....	15	90	163
Year 1900	148	138	16
Year 1899	20	137	194

"The total imports from the United States and Canada in the United Kingdom, during the past season, 1901-1902, are 781,000 barrels, as against 1,300,000 in the preceding one, and as shewn below are the smallest for the last five years. The receipts from New York were insignificant, Canada being the chief source of supply. It is to be feared that results cannot have been satisfactory to shippers, as, consequent on the scarcity, a high range of prices were paid not warranted in the quality of the fruit, which often landed here in doubtful and poor condition, which is so often the experience in seasons of small crops, and has again demonstrated that the atmospheric conditions which caused the failure, generally prejudicially affects the condition and keeping quality of the fruit, to which the late shipments this year have been no exception. California has again, through the high range of prices, been able to place greatly increased shipments on to this market, the receipts being 117,843 as against 70,303 boxes in 1901-1902, which for purposes of statistics are estimated as at three to a barrel. The quality was not very satisfactory, but buyers had confidence in them, as the condition was generally reliable and also being the the nearest approach to the Hudson Newtown Pippin, which were almost an entire failure.

"The prospect of a small English crop gives promise of an early demand for foreign imports, and it is to be hoped that the reports of good crops in the United States and Canada will be realized, as there is every prospect of a large demand in this country. This, of course, it must be repeated, is for good sound quality and condition, as no amount of scarcity will produce high prices for inferior stock, and it is no use paying the heavy freights and expenses with this expectation.

"Reports from the chief Continental growing districts are generally unfavorable."

APPLE CROP NOT EXTRAORDINARY IN ONTARIO.

FROM all parts of the Province comes the same report, viz., that the apples are badly spotted and blemished, so that the yield of No. 1 apples will be comparatively small. Our Ribston Pippins, for example, looked well on the trees, but when we gathered them probably not three per cent. were No. 1, so many were blemished and misshapen; our Fall Pippins, which looked fine on the trees, when picked showed numerous minute scabs which made them nearly all third class; Kings and Gravensteins were much better, and grade largely No. 1, but Spys look very disappointing, and more than one-half will be third class. Besides this, many trees are quite barren, and the orchards will not yield so much above the average as has been supposed. Mr. Race, of Mitchell, evidently agrees with us, he says: "Just made a tour of some of the best apple orchards in this district, and find the prospects much less promising than they were three weeks ago. The average yield of fruit fit for export will be far below that of 1900. There are very few Colverts fit for shipment, though this variety promised well in the early summer. Snow apples are gnarled, spotted and useless; so are St. Lawrence and other fall varieties. Ben Davis and Russett, though numerous, are very small and irregular in shape. Duchess is very fine and will grade well in the picking; so also will the Blenheim and Ribston Pippins. Baldwins promise fairly well, but are as yet much under size. Spys are light and only a small proportion of them will grade up No. 1. One buyer was through the section a few days ago and expressed himself as much disappointed. He said the quantity of saleable fruit would be considerably below an average crop, and did not think that grade one would take many of the Ben Davis, Spys or Baldwins."

Mr. A. E. Sherrington, of Walkerton, says: "The prospects in our section are

very poor for No. 1 stuff. The yield of apples here will not be more than three quarters of the yield of two years ago. There had been a good deal of dropping since the previous report, and it is still on. Ninety per cent. of the apples are more or less spotted, and not more than ten per cent. will grade No. 1. In fact, our intention is to grade all No. 2. No dealers have been here so far as I know, but we have been offered $1.50, the fruit to be barrelled by the producers, and graded as No. 1."

NO. 1 APPLES SCARCE IN ONTARIO.

THE wet summer has caused the growth of so much fungus on the fruit in the northern portions of the Province, and indeed in many orchards of the southern parts, that a large part of the apples will pack under grade No. 2, or, perhaps No. 3. This will cause a glut in all markets of low grade stuff, and a great scarcity of No. 1. No doubt the evaporating factories will have a rich harvest of this grade, and if they pay 40 cents a hundred pounds, we counsel our fruit growers to sell the lowest grades to them, and not to crowd it upon the market. R. J. Graham, writing our excellent contemporary the Sun on this point, says :

"If strictly No. 1 apples were to be picked only, there would be a fair market for our good fruit, but unfortunately we hear of buyers undertaking to pack seconds, and we, therefore, look to see this quality of fruit ruin the market for better goods. We think it will be a disastrous year for speculators who pay any fancy prices for fruit, and we advise everyone to go cautiously, and if possible pack only good goods. We do not think more than 10 per cent. of the crop in Canada would pass No. 1, according to Government standard. The apples in Essex and Kent are much better than in any portion of Ontario, and have mostly been bought at prices ranging from 50c. to $1 per barrel on the trees. We hear of some sales as high as $1.50 for No. 1 fruit east of Toronto and some orchards, bought by the lump. One dollar per barrel for No. 1 fruit is being freely offered in this section (Belleville), and 40c. per 100 pounds for canning purposes.

"This is certainly an off year in the Georgian Bay apple district. The trees are not loaded, and the proportion of small, scabby fruit is abnormally large. 'Not over half a crop,' said Director Mitchell, of Clarksburg Experiment Station, in answer to my question as to crop prospects. 'The western part of the district,' he continued, 'in which most of our apples have been grown, makes the poorest showing this year. The fruit is thin on the trees, and what there is appears to be very scabby.' And Mr. Mitchell did not overstate the case. Some good orchards will not give $1 where $10 has been given."

HOW TO GET BIG PRICES FOR APPLES.

THE way to get big prices is to show a good article. Astracans are selling at 15 to 20 cents a twelve quart basket in August, and Mr. Delos Woolverton gathered the finest windfalls, polished them with a cloth, consigned them to the same buyers in six quart baskets and got 33 cents each for these half baskets !

Prof. Whitten read a paper before the Rochester Convention of Apple Shippers on "European methods of securing enormous prices for first-class fruit." Among other things he said :

"The possibilities of a European market for a larger quantity of American apples should justly claim more attention. Such a market cannot be developed by any one class of men alone. The responsibility rests with the American apple grower as well as with the American apple buyer and shipper. A better understanding of European conditions and strenuous effort and co-operation on the part of all concerned ought to secure in Europe a lucrative sale of increased quantities of apples. In order to arrive at a better understanding of European conditions it is perhaps worth while to mention the fact that the Europeans are well aware that they can never hope to compete with America in the wholesale production of cheap fruit. This fact does not worry them, however, half so much as

might be supposed, in fact, they are not trying very hard to compete with us in that way. They are simply laughing at the 'inferior quality' of American apples, and are turning their attention to the production of apples of the highest quality, so they can have the cream of the market, and they get a price for their product such as we have never dreamed of in America. A half dozen apples of first quality attractively put up in a small basket sell for as much in London or Berlin as a whole barrelful of fine apples in America.

"It should be borne in mind that in America we have a great middle class of comparatively well to do people, including millions of the more intelligent laborers, who consume the greater part of our apple product. It is a source of gratification that we have such a middle class and that we can supply enough apples to bring them easily within their reach. In Europe they have practically no such middle class; generally speaking, the people are rich, aristocratic and luxurious or very poor. The former class do not want to eat cheap apples; the latter cannot afford to. There is far greater demand for moderate priced apples in America than there is in Europe.

"It seems to me the future of our European apple market depends upon our supplying only a first-class article. Let us keep all our moderate priced stuff at home. The European grower is turning his attention to varieties of the highest quality, regardless of productivity. It is more profitable here to grow a smaller quantity of apples of high price than a larger quantity of low price."

FRAUDS OF SPECULATORS.

IT is not at all fair that the blame for bad packing of Ontario fruit should be laid at the door of the fruit grower, when the fraud is the work of the speculator who buys his orchard in a lump for so much and packs to make as much as possible. Nearly all the fraudulently packed barrels of apples, which have led to the passing of the Fruit Marks Act, were done by shippers, and not by the growers, who unfortunately for themselves have hesitated to undertake the packing of their own fruit. Here for example is a note in the Mail and Empire, of Toronto, along this line, headed:

FANCY FRUIT TRADE.

"The Dominion Fruit Inspector at Winnipeg has sent to the Department a box of apples taken from the middle of a consignment shipped to Winnipeg by a firm in Galt, Ont. The apples were described by the shipper as "fancy" Canadian apples. The specimens sent to the department are very poor quality, indeed. Twenty of them weigh only 28 ounces. Twenty hen's eggs of good average size would weigh 40 ounces. It is considered too bad that Ontario fruit is being shipped to the excellent markets of Manitoba and the North-west Territories in this dishonest manner. It is killing the trade out, and playing directly into the hands of the fruit growers and shippers from California. The inspector has been instructed to prosecute the shipper in this instance and every similar instance which comes under his notice."

Now this kind of thing would never occur if we could educate the grower to pack his own fruit, and encourage a few of these men at every shipping point to combine in shipping car lots to proper consignees, for sale.

HOW TO PACK.

FOR a fancy trade in No. 1 apples, the box is the best package. We take out this grade, and the No. 2 goes in the barrel, and is marked accordingly. X, our lowest grade, is No. 1 apples, 2¼ inches in diameter, XX is 2¾ inches, XXX is 2¾, fruit larger than that we call EXTRA, as indicated last month.

We place a thin layer of excelsior first against the bottom, then row in the apples, four wide, four deep and eight long, with padding of excelsior between every layer, in boxes 10½ x 11½ x 22 inches. These boxes are most convenient for consumers, who seldom want a whole barrel because it is too clumsy for the kitchen or the pantry, while a box of apples is just in place, especially if it be a high grade article. Another note, in the above mentioned Journal, fits in just here about; and we quote it because it is exactly in line with our views.

HIGH GRADE PRODUCTS.

"A profitable lesson can be learned from a visit to one of the large fruit markets of the city, or even by a casual inspection of

FIG. 2396. GARDEN OF THE REV. J. T. PITCHER, SMITH'S FALLS, ONT.

the different grades offered for sale at the retail shops. There will be seen peaches the size of an ordinary apple, without spot or blemish, while alongside of them may be a basket of immature bruised specimens that apparently have been handled with the same care that is accorded to anthracite coal. The prices of the one is perhaps a dollar and a quarter, the others are labeled three for a dollar. The amount received by the growers of these two grades would be still more convincing evidence of the necessity for growing only the best or at least of marketing only the best. The top prices cannot always be secured, but the fruit of a high standard of quality never waits a buyer."

CLERGYMEN AS GARDENERS.

WE have often been impressed that clergymen should be the most active supporters of our Horticultural Societies. These organizations afford an open meeting ground for all religious parties, and the study of flowers and fruits is a branch of nature study that leads ones thoughts upward toward the creator of this world of beauty.

As recreation for the body, nothing is better for the minister than an hour or two a day spent in his garden, while at the same time he gets many a suggestion for his sermons, gathered from his garden favorites.

The Rev. A. B. Cohoe, of Grimsby, planted a quarter acre garden last April with rows of all kinds of vegetables to keep a succession, and, while the care of it was a a pleasure and a source of increased health, the proceeds for the table were more valuable, we fancy, than any other quarter acre in the neighborhood.

The Rev. Canon Hole, Dean of Rochester,

England, is famous for his horticultural books, and all the result of his delight in gardening. And here is another Canadian minister, the Rev. J. Pullman Pilcher, of Smith's Falls, Ont., whose success is evident, who kindly sends us a photograph of his garden with the accompanying letter.

SIR,—By this mail I forward a photograph of my flower garden. I am the pastor of a very large congregation, yet for my pleasure and health I find time to cultivate a large garden. The work is all done my myself before breakfast. One hour a day will keep a garden in good order, will supply fresh crisp vegetables for the table, flowers for the church, neighbors and friends and appetite for the gardener.

OUR EXHIBIT AT THE INDUSTRIAL.

THE display of fruit from our fruit stations was exceedingly good this year. Each of our experimenters arranged his fruit in alphabetical order, for convenience of singling out any variety under consideration; and the labels, being written out boldly with a shading pen by our assistant, were a most important feature. The number of varieties of grapes shown by Mr. M. Pettit was limited, owing to the lateness of the season, but the apple collection from Mr. Dempsey, the pears from Mr. Huggard, and the plums from Mr. Mitchell, were unusually interesting.

THE CHABOT.

THIS plum (pronounced "shabbot") is coming to the front rank among the Japan varieties. It fruited this year for the first time at Maplehurst, and we first noted that the tree was fairly productive, and the fruit large and most attractive in color. Next we tested its flavor and were surprised at its excellence; it was tender, juicy and of a delicious flavor, and were almost convinced that it was the best Japan plum we had yet tasted. Surely this belongs to the first rank of Japans.

It was a little disappointing, however, to see this plum as grown in the Beaver Valley in the Georgian Bay District, and shown by Mr. John Mitchell, our experimenter there, for in his exhibit it was much smaller and apparently quite inferior. Conditions of moisture, richness and cultivation of soil must have much to do with these differences, and should be further investigated. "In my opinion," said Mr. Orr, of Fruitland, "the best three Japan plants are Red June, Burbank and Satsuma.

"I do not know the Chabot, and of course it may displace one of these. Satsuma is blood red in flesh, and very desirable for canning purposes."

"In my opinion," said Mr. John Mitchell, our Clarksburg experimenter in plums, "the three best Japans are Red June, Chabot and Burbank. I also think very highly of the Satsuma, and would place it fourth on my list, for it is productive, quite hardy, and a splendid preserving plum.

FINE FRENCH PEARS FOR ONTARIO.

WE have noticed in our experimental plot several varieties of pears worthy of the attention of our fruit growers. One is Triomphe de Vienne, which is of about the same season as Bartlett, but larger in size, and another is the Hoosic, which is a trifle later, but is not only larger than the Bartlett but has a fine red cheek and is of excellent quality. Dr. Charles Saunders, of Ottawa, was particularly taken with a beauful dwarf tree of this variety at Maplehurst, which was bending down with its tremendous load, and took a photograph of it for the exposition at St. Louis. Surely it would be a splendid export variety.

"I have an excellent French pear here at the Industrial," said Mr. W. M. Robson, of Lindsay, "which is worthy of notice. I procured the cions from the late J. K. Gordon, of Whitby, who was so well known for the large collection of foreign pears and plums in his garden. It is Beurre de Mortillet." It was truly a magnificent pear, averaging 2¾ inches in

diameter, well colored, and having a peculiarity in the habit of the stem growing out at right angles to the axis of the fruit. "Another fine French variety, that succeeds well in Canada," said Mr. Robson," is the Duchess Precoce. The tree is an early bearer, and the fruit very fine." We have often noticed this pear as being valuable, especially since Mr. E. C. Beman has grown it with such success at Newcastle. We would suppose that it would be also a good shipper for export.

DISCARDED VARIETIES.

ONE of the most important features of our fruit station work is the warning of our fruit growers against planting inferior varieties. Almost every nurseryman's catalogue is loaded up with a whole list of inferior kinds which he carries simply because they are still asked for; and he will be greatly obliged to us if we can educate the grower to discard them. In our future exhibits we intend making a special table of such varieties, so that growers can see at a glance why we have discarded them. Another feature will be the showing up of varieties which are too much boomed. There are always unscrupulous dealers who want to trade upon varieties before their value is known, and we want to test all such fruits, and where they are not superior to varieties in cultivation we want to warn the growers against them.

COLD STORAGE OF FRUIT.

THE advantages of this means of retarding the ripening of fruit are only begining to be appreciated. By it we can reach distant markets in all parts of the world, hitherto quite inaccessible, and what is still more important we can reach our own markets at almost all seasons, with fruits which otherwise must be sold immediately after harvesting. Professors Hutt and Reynolds, of the O. A. C., Guelph, have been making some interesting experiments along this line, and have reached the following conclusions:

1. Apples and pears keep best when wrapped singly in paper, and packed in a shallow box not larger than a bushel. They ship best when, in addition, they are packed in layers and excelsior between.

2. Apples keep better at a temperature of 31° than at a higher temperature. Our experiments do not show what is the best temperature for pears.

3. Cold storage cannot make bad fruit good; neither can it keep bad fruit from becoming worse. Only good specimens will keep for any length of time in cold storage, will pay for storage.

4. For long storage, it pays to select the best fruit and to pack it in the best manner known. The extra labor and the cost of material are more than repaid in the greater quantity and better quality of fruit left at the end of the storage period.

5. With apples and pears at least, and, it seems likely, for most kinds of fruit, the fruit should be picked and stored in advance of dead ripeness. The maturing process goes on more slowly in cold storage than on the tree or bush.

6. With the two kinds of fruit tried, apples and pears, the medium sizes of fruit keep longer than the largest, all being perfect specimens and picked at the same time. It would, therefore, be an advantage, especially with pears and peaches, to pick the larger specimens first, and leave the smaller to mature later.

7. Fruit, on being removed from cold storage, should be allowed to warm gradually, and moisture should not be allowed to deposit upon it. But if the wetting cannot be prevented, then the fruit should be spread out and dried as quickly as possible.

8. With all kinds of fruit, there is a time limit beyond which it is unprofitable to hold the fruit in cold storage, or anywhere else. That limit, for sound fruit, is dead ripeness.

Duchess pears can be kept profitably until late in December; Fameuse, or Snow apples, until March or April. The time limit has to be determined for each kind of fruit.

9. In addition to proper conditions in the storage room, the most important points in the storage of fruit are the *selection* of sound fruit, *grading* into uniform sizes, one variety only in a case; and careful *packing*. Therefore, the results of these experiments can be made use of by the family, in preserving fresh fruit for their own use; by the fruit-grower, in securing better prices for good fruit later in the season, in the local markets; and by the shipper, in enabling him to take advantage of the higher prices offered in foreign markets.

THE VARYING QUALITY OF NIAGARA GRAPES AND OTHER FRUITS.

AMONG other fruits there is very little appreciable difference in natural quality. To some persons an apple is simply an apple, a peach is only a peach,—the variety makes but little difference if the general quality be above a fair average. With grapes it is very different. Every one is familiar with the old Concord and the newer Niagara; with the Catawba and Delaware; the imported white grapes, the California Tokays, the wild Fox, and the fine "hothouse" varieties are all recognized by sight and taste, if not all by name. Each, too, has its coterie of admirers, and justly so.

There is one fact relating to the Niagara that it is desired to bring out particularly, which is that there are two distinct qualities according to the stage of ripening. Those bunches of fruit that have remained long on the vines and become well developed have a peculiar distinguishing flavor and a strong, agreeable odor; fruit picked early, though ripe, are not well developed, and the quality is really often poor, while the true Niagara flavor is lost. As a rule, the well ripened grapes have a yellowish cast. The new Campbell's Early is said to be the better for remaining long on the vines.

Some apples are noticeably different in quality. The R. I. Greening is very often poor and almost astringent; Baldwin is the same, but perhaps less frequently. Fine specimens of either are of high quality. To a certain extent, the trouble with the apples is similiar to that of the Niagara grape—they are not well developed. But the non-developement may not be the result of their being harvested too soon; there are other factors in the case. Overbearing or a weakening from the attacks of insects will cause an earlier ripening or an imperfect development. When will every fruit-grower learn that the best fruit is most profitable, and that it is only to be had by thorough care and cultivation.?

The Seckel pear is another instance, though there may be additional trouble of another nature—namely, that the true qualities have been lost somewhere in course of propagation. But the chief complaint is against the miserably grown fruit that gets into the market—ill-shapen, undeveloped stuff that by no means satisfies the lover of this delicious variety.

The Keiffer Pear is exceedingly variable, and here again depends upon the care and judgment exercised in picking and ripening. This pear may be a delicious, juicy, soft-grained fruit, or it may be coarse, dry and almost worthless.

It would be disastrous to allow a Clapp's Favorite Pear to ripen on the tree, as it will rot inside unawares. Picked early and ripened in the dark, it ripens uniformly and is delicious.—*Meehans' Monthly.*

ORCHARDING IN THE ANNAPOLIS VALLEY N. S.

OBSERVATIONS BY THE CHEMIST OF THE EXPERIMENTAL FARMS ON SOILS, CROPS, ETC.

AT the request of the Boards of Trade of Annapolis, Kentville and Windsor, and by the authority of the Minister of Agriculture, Mr. Frank T. Shutt, Chemist of the Experimental Farms, recently made a tour through the famous apple growing section of Nova Scotia, partly to give addresses and partly to gain further information regarding the nature of the soils in that district and the methods of orchard culture in vogue.

To a horticulturist representative, Mr. Shutt said: "My trip has been most profitable and pleasant. While the attendances at some of the places where I spoke was not large, owing to pressure of work at this time of the year upon the farm, we always had most interesting and instructive meetings. The discussions and questions asked showed a keen appreciation of the value of scientific knowledge as applied to practical orcharding. I found a large number of men who are carrying on their work on rational lines—not only reading men, but men who are putting to the practical test the methods suggested by the results of experiments carried on here and at other research institutions. We have already a number of careful enthusiastic co-workers there, and I feel convinced that every year will see an addition to that number. Several have promised me, or rather have volunteered to carry out, and take observations upon, certain experiments or systems of soil fertilization and culture, and such must result in increased knowledge as to the most profitable ways to manage orchards. Certainly, the orchardists of Nova Scotia are amongst the most intelligent and progressive that I have met in Canada."

What are the chief products? "Hay, apples, potatoes and oats. The hay is grown on the fertile, dyked lands. Such are seldom fertilized (though some farmers are now using a certain quantity of bone meal on them), and only occasionally reseeded, when oats are used as the nurse crop. It is not at all unusual to take two tons and over of hay per acre for a number of years without breaking the sod or applying any manure.

"The orchards are planted for the most part on what we should call the upland soils—upon the gentle, rising slopes of the mountains, and there they flourish, for the trees get good natural drainage. The orchards are mainly apples, but plums, pears, cherries, peaches and small fruits are also in some parts extensively grown. The soil and climatic influences seem particularly well adapted to fruit growing of all kinds. No doubt the future of that country —I refer to the valleys and adjacent lands of that part of Nova Scotia—lies in fruit growing, and it will be successful. All the progressive, up-to-date men are now practising clean culture, and the turning under of clover or some other green crop to enrich the soil, and the results are excellent. A considerable and ever-increasing amount of commercial fertilizers (principally bone meal and muriate of potash), is being used."

What do you think of the soil generally? "Leaving out of consideration the dyked

lands, which, as a rule, are heavy loams containing a fairly large amount of clay, the soils are, for the most part, light and gravelly. As we ascend the slopes of the hills or mountains, the soils become poorer in quality, gravels or sandy loams containing a good deal of stone. Of course, as in other parts of Canada, there are great differences in quality to be observed, but one may say there is a predominating type on the slopes and higher lands of a sandy or gravelly loam. Such are warm and responsive to good treatment. Supplied with humus and plant foods, they are well adapted to orcharding. Perhaps the system of maintaining or increasing fertility of the soil by growing and turning under clover, will be of more value to the Maritime orchardist than to the Ontario farmer."

Why do you think so? "Because the fruit growers as a class keep very few cattle; they produce very little manure on their farms, hence their lands become impoverished in humus, which, you must remember, is a most valuable soil constituent, but one not furnished by commercial fertilizers. Clover adds a large amount of humus, as well as nitrogen to the soil. By its decomposition in the soil it also sets free considerable amounts of phosphoric acid, potash and lime in forms available to succeeding crops. I feel sure there is no way in which the Nova Scotian can so cheaply, and we may say permanently, improve his upland soils as by growing clover. They have a quick, responsive soil which only needs feeding and cultivation (to conserve moisture) to obtain excellent results."

I hear that their apple crop is poor this year? "That is true. Not only is it small in quantity, but there is a large percentage of inferior quality fruit. Nevertheless, there are many orchards, as I can personally testify, bearing a good average crop. On the whole I should say it would be below, rather than above, 50 per cent. Some varieties are poorer than others. Thus, the Golden Russet is practically a failure this year; but the Blenheims are yielding fairly—very fairly—well. Those who have fed their soils and sprayed their trees will have a good crop to market."

Is there any special reason for this failure? "I think it principally due to cold, wet winds prevailing when the trees were in bloom. The frost did not do so much harm as the rain and wind."

REFRIGERATOR CARS

THE Canada Atlantic Railway Company has recently constructed a number of Hanrahan refrigerator cars for the carriage of tender fruits. The cars have been running between Grimsby and Ottawa, at a cost of about one-third that charged for expressage. The Ottawa Fruit and Produce Exchange, for whom the C. A. R. cars were built, report as follows, under date Sept. 20:

"Hanrahan car 40191, loaded at Grimsby on Saturday 13th, arrived here on Monday night and was sold on Tuesday morning in perfect condition, and realized prices equal to Express goods sold at the same time.

"Hanrahan car 1517, loaded part on Monday, balance on Tuesday, arrived here on Thursday, the 18th, in perfect order, and sold Thursday evening at 6.30, realizing prices equal to Express. No sign of decay or any of the goods being affected with age or with time of standing whatever.

"Hanrahan car 1522, loaded on Wednesday the 17th, arrived here Friday the 19th, at 8.30 p. m., and was sold on the morning of the 20th, when every package in the car was in perfect order and realized excellent prices."

Car No. 40191 is the car that was remodelled by the Grand Trunk Railway at the instance of the Ontario Government.

IMPROVING AN OLD ORCHARD

SCRAPING AND PRUNING—FEEDING AND PASTURING—POOR VARIETIES SHOULD BE TOP GRAFTED—HOW TO GRAFT—GOOD GRAFTING WAX—SPLENDID RESULTS

BY

W. H. COARD, LL. D.

DEPARTMENT OF AGRICULTURE, OTTAWA.

MANY an old orchard which is now an eyesore to everybody can, at little cost, beyond slight labor, be converted into an up-to-date tidy, prolific, and profitable branch of the farm. There are many orchards in Canada which bear more worms than fruit, because the generality of farmers cannot be brought to learn that fruit raising pays even if it be grown merely for home consumption. It will only occupy three years to evolve a plentiful harvest as well as a symmetrical well kept orchard out of lichen and moss-covered trunks, if the advice given in this article be followed with fair faithfulness.

The first thing to be done is to scrape off the rough, loose bark from the trunks and branches, and to prune the trees. While it is true that this rough bark may appear to do but little harm, it affords comfortable free board and lodgings for noxious insects which thoroughly appreciate and avail themselves of this hospitable shelter.

Pruning may be as simple as A B C. At first only dead branches and crowding suckers need be removed; unless the trees be old and decrepit with dying branches and waning strength, and in that case the pruning should be vigorous. As a grape vine can be renewed so can an apple tree, and in extreme cases a tree may be cut to the ground and another one built upon a short shoot which will spring up. Cut out old branches, leave young suckers to take their place, then a new top will quickly form, and good fruit will follow. Always take care to thin out useless branches, because sunshine and air are inseparable from the steady, healthy growth of orchards as of individuals.

An apple tree must be fed if it is to produce fruit, and no diet is more suitable or inexpensive than a leguminous cover crop. Trees require moisture and food; therefore grass and weeds must be removed. To succeed, the farmer must plough his orchard and till the ground, tillage being continued frequently during early summer. By midsummer wood growth generally ceases and tillage should stop. A cover crop sown then will not only protect the soil from washing but will add humus to it, while a clover crop will gather all the nitrogen necessary for the next year's growth.

A good alternative to ploughing the orchard is to pasture it with hogs and sheep, preferably the former, and always to keep more animals there than the grass will support, because this will insure supplementing the grass diet by grain, which naturally will bring fertility to the orchard and insure that the grass will not grow tall. Where animals are not grazing in an orchard the grass should be mown early and left on the ground to add humus to the soil; but this is not nearly so beneficial as grazing the land.

Insects and fungi have to be considered with, and it will be necessary to spray with

Bordeaux mixture and Paris green at least twice after the blossoms have fallen. The former will clean the limbs of hanging lichens or moss, and the latter will settle most of the noxious insects, though it cannot reach the apple maggot, which calls for special treatment, because it is the larva of a small fly which punctures the skin of the apple and lays its eggs underneath. No matter how thorough the spraying may be it cannot reach this pest ; but if the windfalls can be destroyed as soon as they drop, and all refuse from places where winter fruit has been stored be burned, the next season's numbers will be appreciably reduced. It is in this respect that pasturing the orchard has a marked advantage, because if well stocked with hogs or sheep the apples are eaten before the insect is likely to escape.

There are some instances in which the orchard may be in such a condition from long neglect that the land cannot be properly tilled, and the trees cannot be adequately fed. One of the best methods of feeding the tree is to keep it well pruned, because then the food which would otherwise be diffused in numbers of worthless limbs is concentrated in a small number. It is only the well pruned trees that are capable of successful treatment with sprays. Apple and pear trees should be pruned to keep the heads open. Plum trees should be pruned to keep out the black-knot, and some Japanese varieties require frequent cutting back. All pruning can best be done very early in spring, before the sap starts.

There are so many apple trees of little value growing in Canada, which could be successfully top-grafted with better varieties, that it would well repay anyone possessing an orchard to go carefully over his trees and top-graft those which do not produce paying crops. The chief points to take into consideration in top-grafting may be summarised as follows :—

Old trees, if healthy, may be grafted with success.

The top should not be all cut away the the first year, but should be removed gradually, the time required to change the top successfully being from three to five years.

Early spring, before growth begins, is the best time to graft. The branches to be grafted should not be more than from two to three inches in diameter where the grafts are to be inserted.

After the branch is carefully sawn in two, the stub is split with a mallet, held open with a wedge, and the scions inserted ; two being used, one on each side, if the branch is more than an inch in diameter.

The scion is made from a twig of the previous year's growth, about four or five inches long, and having three or four buds. It is prepared by making a wedge of the lower end, beginning near the base of a bud. The scion is inserted in the stock as far as the upper edge of the wedge.

In inserting the scion great care should be taken that the inner bark of both scion and stock should come in contact with each other. This is very important, as the healing begins from this point, and if the scion be inserted carelessly there is almost certain to be a failure.

After the scion has been set, the cut surface is covered over with grafting wax to exclude the air, and strips of cotton may be wrapped over this.

A good grafting wax for out door use is made by melting together rosin and beeswax in the proportion of five parts rosin and two parts beeswax ; to this is added one and one-half to two parts linseed oil.

In top-grafting a tree always have in view the production of a symmetrical top after the old one has been removed.

With this cultivation codling moth will disappear, and in three seasons an old ugly and comparatively worthless orchard can be converted into a pretty uniform one, with abundant crops of marketable and profitable varieties. An orchard is "never too old to mend," or beyond renewal.

THE POTATO BLIGHT

BY

PROF. W. LOCHHEAD

ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONT.

THE blight which attacked the leaves and stalks of potatoes during the latter half of August was felt over the larger part of the Province. It is rather early to give an estimate of the damage done, for in many cases the tubers are still healthy and moderately large, while in other cases many have begun to rot.

For some years the blight has not been severe. This year, however, was an abnormal one as far as the weather is concerned, and the moisture conditions were favorable for the development of the fungus which caused the blight. During July and August there was much rain, with intervening spells of warm, not to say hot, weather. As the fungus grows most rapidly in a temperature of about 70° F. when the air is humid, it will be readily seen that it was possible for the disease to make a very rapid headway this season.

There is scarcely a year when there is not a little blight present, but with its remarkable powers of reproduction the fungus may spread with amazing rapidity when the conditions are favorable.

The fungus blight is an internal parasite, hence spraying with Bordeaux is of little avail in preventing injury after the plant becomes infected. Spraying is valuable, however, in preventing the spread of the disease to unaffected plants and should not be neglected. Observations show that fully 99 per cent. of our potato-growers take no precaution whatever to ward off fungus diseases from their crops. Paris green is used everywhere to kill the beetle, but Bordeaux mixture is seldom or never applied to prevent blight. A spray composed of a mixture of Paris green and Bordeaux would ward off both the beetle and the blight. The fruit grower has learned by experience the value of this mixture in combating the codling moth and the scab. Some years the scab is not serious, but the fruit-grower always takes the precaution to spray his trees thoroughly, for he cannot forecast the season with any degree of accuracy. "Fore-sprayed is fore-armed" is his motto, and it ought also to be the motto of the potato-grower.

For the best method of preparing and applying the combination, Bordeaux and Paris green, consult Spray Calendar, Bulletin 122, published by the Department of Agriculture, Toronto. For potatoes, however, use 8 oz. Paris green instead of 4 oz. to the barrel. Spraying should be done all through July and August.

The potato blight first shows itself as small, brownish blotches on the leaves. These rapidly enlarge so that in a few days the entire field becomes blackened. During the early stages a delicate, white, felt-like covering may be seen at the margin of the brown areas on the under side of the leaf. This is composed of an immense number of branching threads bearing spores. These spores are readily dislodged from the threads and are carried away by the wind to the surfaces of other leaves where they germinate at once and send germ tubes into the leaf. Once within the leaf they grow rapidly by feeding on the juices, and soon set up the diseased condition known as blight. If, however, the leaves are covered with the

Bordeaux the spores which alight on them are killed and infection prevented.

The way the tubers become affected is not so clear, but it is probable that the spores, on falling to the ground, are often washed by rains through the soil to the tubers, into which they force an entrance and set up conditions which give rise to the rot. In some plantations this year only the uppermost tubers are rotten. This would seem to favor the idea that the rot was produced by spores washed down by rains.

As the winter spore of this fungus is not known it is supposed by many authorities that the fungus winters over as thread in diseased tubers, and that after planting the tubers the following season the threads grow into the new shoots and into the new leaves. If this is the case, it becomes important to plant "seed" potatoes from the localities where the blight was absent the previous season.

Some authorities are of the opinion that the fungus winters over as a thick-walled spore in the tissues of the dead leaves and stalks. This supposition is a quite probable one, for many closely related blights winter over in this way, and their winter spores are not difficult to find. But the potato blight winter spore has, as yet, not been found, hence the various suppositions as to the method the fungus adopts to survive the winter. If the blight has a winter spore, then all the dead stalks and rotten tubers should be *burned*. They should never be thrown on the manure heap, for with the application of this manure to potato ground the following year many spores will be distributed, and ready to infect the new plants. At this juncture it would be advisable to remove the dead stalks from the ground before digging up the tubers, for it may prevent further infection of the tuber and subsequent rotting.

NEW FRUITS

THE BARTLETT PLUM

ONE of the most delicious plums that is now on the market is Burbank's Bartlett. A small dish of them will soon fill a room with a delicate aroma, which strongly suggests bananas. In fact, the children insisted that bananas were on the sideboard until they were told to go and take a look and a smell. Now, when they smell bananas, they want Bartlett plums. This plum is about the size of a Tragedy prune, yellowish green when at the right stage to pick and in a day or two will turn a dark, shiny red. The flesh is soft and juicy, deep yellow, and has a decided Bartlett pear flavor. The skin is very thin and tender, has no sour or astringent taste common to most plums, and cracks if heavy dews fall on it when allowed to ripen fully on the trees. It is decidedly a plum for the home orchard, and should be in every one. The tree is not particularly prolific, although it has all it can carry this year. The two previous years the crop may have been light.

Climax is considered a choice plum from some accounts, but on the sandy soil of the Pomona valley it has proved a failure. It is a fine looking plum, but does not bear with us. We have failed to secure a good specimen, for what few set have always fallen off before they thoroughly ripened. Shiro is a most wonderful bearer, is a fine looking plum, but lacks flavor with us. It makes a good shipper, for it is firm and a beautiful lemon yellow. In shape almost perfectly round.—*Cal. Cultivator.*

APPLE GROWERS' AND EXPORTERS' ASSOCIATION

NOTES OF MEETING HELD IN ROCHESTER, AUGUST 6TH AND 7TH, 1902

CANADA was represented at this meeting in the persons of Peterson Bros., Toronto; W. McWilliams, Toronto; H. Dempsey, Rednersville; James Depew, Southend; J. M. Shuttleworth, Brantford, and W. N. Hutt, of the Ontario Department of Agriculture and others.

This association differs somewhat from the Ontario Fruit Growers' Association in that its efforts are devoted almost entirely to the commercial aspect of apple dealing. The membership fee is $5.00 per annum, and being somewhat exclusive the membership is limited and made up only of those who have gained the confidence of the association. It aims at estimating the extent and value of the apple crop throughout North America, and the collaborating of all information which would assist in establishing a fair price to offer for apples during the season.

Monthly reports are issued by the association giving the number of barrels of apples in storage in all parts of the country, and the clearance from these houses during the month.

The practical, orchard side of the apple question was treated by Prof. Craig, of Cornell University, who gave a very interesting and instructive paper on the management of orchards in relation to trimming and pruning, fertilizing, the use of cover crops, the conservation of moisture, thinning and marketing of fruit. This paper was much appreciated by all at the convention and gave a great deal of information in a very interesting way.

Prof. W. A. Taylor, Pomologist, in charge of Field Investigation in the United States Department of Agriculture, Washington, gave an illustrated address on "The Commercial Areas of the United States." A map marked out with the areas under orchard throughout the different States showed a very wide extent and showed also that Missouri particularly was a large grower of apples.

Prof. A. S. Beach, of the Agricultural Experiment Station at Geneva, gave a valuable report on "The Keeping Quality of Apples," and brought out many points that were rather a surprise to the audience. One of these was that the Northern Spy was not a valuable keeper in New York State. This was rather a striking contrast to the splendid Spys raised in the Province of Ontario which keep well until the following summer. Prof. Beach remarked that apples from orchards in sod were higher colored and better keepers than apples raised under cultivated conditions, though of course the apples are not so large nor the crop so heavy.

W. N. Hutt, of the Department of Agriculture, Toronto, gave an address on "Pruning of the Orchard" illustrating his remarks by means of sections of limbs of trees showing the proper formation of the tree, and also injury that might be done to the tree through careless or injudicious pruning.

FIFTH CONVENTION OF THE CANADIAN HORTICULTURAL ASSOCIATION

HELD AT HAMILTON, SEPTEMBER 3RD AND 4TH, 1902

THE C. H. A. Convention just passed will do more to set Canadian floriculture on a permanent and proper basis than all of its predecessors ; this is a statement that we think will pass unchallenged.

The untiring work of the Hamilton Gardeners and Florist's Club and the officers of the C. H. A. to bring about a Convention and Trade Exhibit that would adequately represent the Horticultural standing of the Dominion cannot be allowed to pass without suitable mention, also the hearty cooperation of the Hamilton Horticultural Society. We would say that it is a vigorous young body, only 5 years of age, being organized in St. George's Hall, Toronto, in 1898 ; Mr. William Gammage, the well known London florist, being its first president. Since that time the association has convened in the cities of Ottawa, Montreal, London and lastly at Hamilton. The object of the association is to organize and carry forward the interests of the florists, nurserymen, seedsmen and gardeners of the whole Dominion, and anyone interested in horticultural pursuits, whether amateur or professional, is eligible to membership. That its aims are strongly of a national character was evidenced by the discussion which followed the recommendation of Prof. Hutt of the Ontario Agricultural College that the name of the organization be changed to the "Ontario Florists Association," and so receive a provincial grant in the same way as the other provincial organizations.

We quote the following paragraph from the Florists' Exchange, a weekly New York publication, which will show the impression that the late Convention of the C. H. A. created abroad:—

"The Convention of the Canadian Horticultural Association just closed at Hamilton has proved to the world that a new power

FIG. 2397. THOMAS MANTON, EGLINTON.
President Canadian Horticultural Association.

has risen in the north—a power for good and the promulgation of floricultural weal. In debate it has shown that it was intended to be and now is a Canadian National Society, with the intention of uniting in one common accord and working effectiveness all portions of the great Dominion interested in floriculture. That it may accomplish its aim, achieve success in the highest, and work hand in hand with our own Society of American Florists for the promotion of the welfare of our ancient and honorable calling is the sincere prayer of its well-wisher, The Florists Exchange."

THE CONVENTION

The Convention was held in the City Hall. On Wednesday, September 3rd, at 2.30 p. m., the first session was opened by Mr. C. M. Webster introducing Alderman J. G. Y. Burkholder, who in the absence of Mayor Hendrie welcomed the delegates to the city. He closed his interesting address by remarking, "You have the freedom of the city and can take away anything you wish excepting our mountain." The address of welcome was responded to by Thos. Manton of Eglinton.

President Joseph Bennet, of Montreal, then addressed the meeting in a few well chosen words. He reviewed the progress the Association had made during the past year, and also spoke eloquently of the widening of the aims and objects of the C. H. A. He pointed out that there are over 1200 persons engaged in the interests of floriculture in the more populous districts of Canada. The urgent need of a Canadian Trade paper was also dealt with ; the large growers had yearly more and more stock to dispose of, and they felt the need of an advertising medium to reach other members of the craft throughout Canada.

REPORTS OF TREASURER AND SECRETARY

The report of Treasurer Hermann Simmers, of Toronto, was then read. It showed the finances of the Association to be in a flourishing condition. The report was adopted without discussion.

The report of the Secretary, A. H. Ewing, Woodstock, was then read. He spoke most hopefully of the work of the Association and its future. The death of Mr. C. G. Knott, of St. John's, N. B., had removed one of the most active workers among the members of the Association. He regretted that lack of time had necessitated his giving the preparation of the Convention program into other hands.

A request was read from the Superintendent of the Flower Show that judges be appointed from among the florists.

The following were selected by the President : Thos. Manton, Eglinton ; E. Mepsted, Ottawa ; A. C. Wilshire and Jas. McKenna, Montreal.

FIG. 2398. GORE PARK, HAMILTON.

After an interesting discussion on the President's paper, the following were appointed to bring in a report on the advisability of establishing a trade paper: Wm. Gammage, London; J. H. Dunlop, Toronto; Joseph Bennett, Montreal; Jno. A. Campbell, Simcoe, and C. M. Webster, Hamilton.

Some very practical advice on the matter was given by Mr. F. R. Pierson, Tarrytown, N. Y., and Mr. A. T. De La Mare, of the Florists' Exchange, New York.

The first session adjourned at 4.30 p. m., and the delegates were taken to the Floral Fete and Trade Exhibit in the Thistle Curling Rink. All agreed that it was the best Trade Exhibit ever held in Canada, and the amateur exhibits were pronounced very high class.

EVENING SESSION

The hall was completely filled at this session, and the close attention of the delegates was favorably commented on by the American visitors.

A paper on "Winter Flowering Plants," prepared by C. A. Smith, Montreal, was read by Fred. Bennett, of the same city.

A most interesting and up-to-date paper, "The Latest Facts About Roses," by Edward Dale, of Brampton, brought out a most useful discussion on grafting.

Mr. W. N. Hutt, of the Department of Agriculture, Toronto, explained that he was present to find out for himself what the C. H. A. really was, not having any definite information about the organization. He deprecated the fact that so little had appeared in Canadian publications about the

FIG. 2399. A. H. EWING, WOODSTOCK.
Secretary Canadian Horticultural Association.

organization, and advised that one sure way to forward their interests was to use the columns of those papers who would gladly print any information that was given them. He suggested that the Association approach the Canadian Horticulturist about the publication of a trade paper.

A TRIP TO GRIMSBY

On Thursday at 8-15 a. m. the delegates left on a special car on the Hamilton, Grimsby and Beamsville Electric road. A stop was made at Winona at E. D. Smith's shipping house; everyone was interested in the process of handling and packing fruit for long distance shipping and also the cold storage plant in which fruit is cooled for shipping to Great Britain. The trip was then continued as far as Grimsby Park. When the car returned another stop was made at E. D. Smith's and he personally conducted the party through his extensive nurseries and made no objections to the raids which the delegates made on the various fruit plantations, allowance being made for the delegates from Montreal and other northern points, to whom the fruit belt appeared like the Garden of Eden. The car pulled into Hamilton about 12 o'clock at noon and the whole party proceeded up James street to the foot of the mountain, up which they were taken on the Incline Railway. Quite a contingent of newly arrived delegates were found on top and about one hundred did justice to the dinner provided by the Hamilton Gardeners and Florists' Club. Mr. T. Lawson, Secretary of the Club acted as toast master and the following toasts were proposed and responded to:

Our King and Country, responded to by Prof. Hutt, and C. M. Webster

The Canadian Horticultural Association, responded to by Joseph Bennett, Jas. McKenna and J. H. Dunlop.

Tne Society of American Florists, responded to by F. R. Pierson, Tarrytown, and Mr. Clucas, New York.

The Gardeners and Florists' Club was responded to by Messrs. Manton, Mepsted and Gammage.

The members were then grouped on the steps of the Mountain View pavilion and photographed.

THURSDAY, 3.30 P. M.

The meeting was called to order by President Bennett at 2.30 p. m. There was an overflow meeting which should be taken into account in the selection of a meeting hall for next year.

Prof. Hutt spoke on the relation of the professional florist to the local Horticultural Societies. His remarks about changing the name of the Association called forth a good deal of argument. But the pith of his remarks addressed to professional florists were listened to with rapt attention.

A paper on the Hardy Perennial Border was read by Andrew Alexander, President of the Hamilton Horticultural Society. It was a masterly tribute to the new popular hardy perennials.

FIG. 2400. CITY HALL, HAMILTON, WHERE THE C. H. A. CONVENTION WAS HELD.

Roderick Cameron, of the Queen Victoria Park at Niagara, gave an address on the Advantages of Cold Storage of Plants to Florists and Gardeners.

The last paper of the afternoon was that prepared by Geo. Hollis, Bracondale, on Hybridizing. It was read by Mr. J. H. Dunlop, Toronto. It was of absorbing interest and showed that the gentleman, to whom we owe the production of Chrysanthemums Timothy Eaton and Lady Roberts, and several other plants of merit, understands his business and carries out his work on scientific principles.

The next order of business being the selection of next place of meeting, Mr. Thos

FIG. 2401. HERMANN SIMMERS, TORONTO.
Treasurer Canadian Horticultural Association.

Manton said that the Association had a standing invitation from Toronto, but he would not urge it as Torontonians had the reputation of grasping for everything in sight.

Mr. W. Gammage and Robert Brooks, Fergus, extended an invitation to meet at Guelph next year.

John H. Dunlop spoke for Toronto, saying that owing to Mr. Manton's bashfulness and his retiring disposition he would have to undertake to tender the invitation to Toronto.

It was moved by E. Mepsted, seconded by J. McKenna that Toronto be the next place of meeting. The motion was carried.

THURSDAY—EVENING SESSION

Wm. Hunt, of the O. A. C., Guelph, read a paper on Summer Flowers for Florists. He called attention to some very useful plants which are not at present much used. He also reviewed some of the standard kinds.

A paper on Heating Greenhouses, prepared by Mr. Edward Gurney, of the Gurney Foundry Co., of Toronto, was read by one of their enterprising young men, Mr. E. J. Brewer. The paper was most carefully prepared and was read by the young man in a masterly manner, which called forth rounds of applause.

OFFICERS FOR 1903

The following officers were elected: President, Thos. Manton, Eglinton; 1st Vice-President, Geo. A. Robinson, Montreal; 2nd Vice-President, E. J. Mepsted, Ottawa; Treasurer, Hermann Simmers, Toronto; Secretary, Arthur H. Ewing, Woodstock.

The following were elected on the Executive Committee to take the place of retiring members: Mr. Wm. Algie, Brampton; Mr. Jno. A. Campbell, Simcoe; Mr. A. C. Wilshire, Montreal; and C. M. Webster, Hamilton, to take the place of C. G. Knott, deceased.

The other members of the Executive are W. J. Lawrence, Mimico; Walter Muston, North Toronto; O. G. Johnston, Kingston; T. Manton, Toronto; and Wm. Gammage, London.

The Trade Paper Committee reported that the time at their disposal was insufficient to propose anything definite and the matter was left in the hands of the Executive Committee to deal with at their next meeting.

FINAL RESOLUTIONS

Votes of thanks being tendered to the President, Joseph Bennett, to the Mayor and Council of the City of Hamilton for the use of the City Hall for holding the meetings in, the Hamilton Gardeners' and Florists' Club, the Hamilton Horticultural Society and the Hamilton daily papers, for their full reports of the convention.

The meeting adjourned at 9.45 p. m. to meet in Toronto, 1903, at the call of the President.

THE TRADE EXHIBIT

Great credit is due to the Gardeners' and Florists' Club for the remarkable energy they displayed in getting together the large

and representative Trade Exhibit. They grasped the idea that a Trade Exhibit was a necessary adjunct to a good Convention, and they succeeded in materializing an Exhibit such as has not been attempted at any former Convention.

Exhibits were secured not only from florists, but from all manufacturers of and dealers in florists' supplies that could be persuaded to exhibit. The enthusiasm which this Trade Exhibit called forth has made each and all of the officers resolve to carry this feature forward with renewed vigor at the next Convention.

The following firms appeared in the Trade Exhibit :

The H. Dale Estate, Brampton, cut roses.

R. Jennings, Brampton, carnations and early chrysanthemums.

The King Construction Co., Toronto, two sections of their iron construction greenhouse with two or three different styles of ventilating apparatus attached. Models of an automatic stoker and steam boiler were also exhibited by this enterprising firm.

John A. Campbell, Simcoe, gladiolus bloom.

F. A. Carpenter, Hamilton, Pilkington's English greenhouse glass, rubber hose and valves and pipe fittings.

Cavers Bros., Galt, the Auto-Spray, a spray pump for greenhouse use.

R. G. Olmstead, Hamiton, ornamental iron vases, iron garden seats, etc.

David McLeod, Hamilton, florists' plants.

D. J. Sinclair, Toronto, general florists' supplies, wire designs, metal designs, fancy baskets, wheat sheaves, etc. A very attractive exhibit.

Hall & Robinson, Outremont, Que., ferns and other florists' plants.

Grimsby Manfg. Co., Grimsby, fruit and vegetable baskets.

Clucas & Boddington, New York. bulbs and palm seeds of first-class quality.

FIG. 2402. E. MEPSTED, OTTAWA.
2nd Vice-President Canadian Horticultural Association.

American Florist Co., Chicago, literature.

Robt. Evans Seed Co., Hamilton, bulbs, mushroom spawn, sprayers.

Adam Dunn, Galt, Begonia Triomphe de Lorraine and other varieties.

Messrs. Van T'Hof & Blokker, Haerlem, Holland, Dutch Bulbs in many varieties.

The Foster Pottery Co., Hamilton, flower pots, hanging baskets and fern pans.

The Florists' Exchange, New York, floricultural books.

John A. Bruce & Co., Hamilton, bulbs and florists' supplies.

L. H. Foster, Dorchester, Mass., specimen of the new Nephrolepsis, Anna Foster.

T. R. Pierson Co., Tarrytown, specimen of Nephrolepsis Piersoni. Received special attention.

Walter Holt, Hamilton, carnations and other florists' stock.

S. S. Bain, Montreal, new Coleus and rare plants.

Webster Bros., Hamilton, perennial flowers and florists' plants; an extensive exhibit.

J. Gammage & Sons, London, Begonia Gloire de Lorraine in splendid shape, also general florists' stock.

G. N. Sones, Hamilton, plants for retail trade.

E. G. Brown, Hamilton, plants for retail trade.

F. G. Foster & Son, Hamilton, plants for retail trade.

Joseph Bennett, Montreal, beautiful Adiantums in pans, also florists' plants.

Certificates of Merit were awarded to the T. R. Pierson Co., the King Construction Co. and the Foster Pottery Co.

NOTES

It would seem that in this flower show the matter of closer relations between the amateur and the professional Horticultural Societies has been solved. For the members of the trade and the Horticultural Society worked hard in hand with the utmost harmony and it was freely said that the show would be made an annual affair if at all possible.

Several genial members of the Horticultural Society added materially to the sociability of the Convention.

The majority of the delegates came from the following centres, Montreal, Toronto, Ottawa, Guelph, Brampton, Niagara Falls, Brantford, Simcoe, Woodstock, and Chatham.

It is the avowed intention of the association to meet in the future in Winnipeg, Halifax, Vancouver, and other distant points. The true national spirit is present.

Such a Horticultural Association was considered and looked forward to by some of Canada's leading florists for many years before the organization. All of this little body are now active members of the C. H. A. with the exception of F. G. Foster, Hamilton, whose poor health has not permitted him to take an active part; also Harry Dale Brampton, and Jas. F. Webster, Hamilton, who did not live to see the successful launching of the organization.

Those desiring information about membership, fees, etc., should write to Arthur E. Ewing, Secretary of the Association, Woodstock, Ont.

SOME SPECIAL FEATURES OF THE FLORAL EXHIBITION

A very beautiful and artistic feature of the exhibit was the competition in table decoration. This showed tables arranged for dinner with flowers arranged in as pleasing and artistic forms as possible. The exhibit attracted considerable attention, particularly from the ladies visiting the exhibition.

Another novel feature was the exhibit in plant photography by James Gadsby, of Hamilton. This contained many wonderful specimens of photographic art. There were canpanulas, lilies and groups of flowers, fruits and lawns, all of which looked very natural. This work would be very valuable to any magazine wishing to illustrate flowers and fruits from half tones.

Probably the best educational exhibit in the whole show was that of the Hamilton school children. In the early spring aster seeds were given to the children to grow in their gardens and there were 186 entries in the flower show. These were grouped as to schools and labelled as to individual exhibitors. The results shown from those few packages of seeds was simply marvelous and would have done credit to the skill of any professional florist. Work of this kind is certainly very valuable as an educator to children and should be encouraged and fostered by our city officials.

W. N. Hutt.

Toronto.

SUMMER FLOWERS FOR FLORISTS

PAPER READ BY

MR. WM. HUNT

ONTARIO AGRICULTURAL COLLEGE, GUELPH.

THE commendable and increasing demand on the part of the flower-loving public during the last few years, for a greater display of taste in the more natural arrangement of flowers, necessitating their more lavish use in the make up of designs and floral decorative work in general, makes it imperative on the part of florists, to consider well as to how they can best supply the wants of their customers in this respect.

The grouping of palms and foliage plants, as well as the very general use of large quantities of fern fronds, asparagus, etc., for room decorative purposes, often requires the use of large quantities of flowering plants and cut flowers, to brighten up the density of these masses of green. Bright colored foliage plants, such as crotons, pandanus veitchii, etc., are admirable for this work, but they are not always available, and cannot be used in many positions, even where they are to be had.

Roses and carnations can of course usually be obtained, but these cannot always be had at prices that will warrant their use except for the finer points of florists' work. Out of door flowers can usually be had in summer, but with the failure or partial failure of the sweet pea and aster crop, even these during the hottest weather in summer are often very limited both in quantity and quality, and many kinds of out-door flowers are too common almost to allow of their being used satisfactorily.

It seems to me that the empty benches so commonly seen in many florists' establishments, could be more profitably used than they are, to supply this demand for a better class of flowers than is often obtainable out of doors during the summer months.

Japan lilies, more especially lilium speciosa alba, lilium rubrum and lilium auratum, as well as other varieties of this class can be, and are grown in large quantities, but these sometimes, like our at one time reliable and beautiful Easter lilies, have of recent years become more fickle and uncertain in their character, and are at the best too costly, except for the very best class of work.

Although it is impossible to attempt even to fill the place of the gorgeous beauty of roses and carnations, as grown at the present day by our florists, or the more chaste and delicate beauty of the lily, there are some plants that I have found most useful as accessories and auxillaries to these indispensable florists' flowers mentioned. I have reference more particularly to begonias.

For many years past I have grown Begonia Weltoniensis and Begonia MacBethii and Begonia Weltoniensis alba in as large quantities as desired, and although these varieties have been known to most of us for over a quarter of a century, or at least two of them,—they cannot in my opinion be surpassed by any of our newly introduced varieties, taking ease of culture, handling and keeping qualities, as well as profuseness in flowering habit into consideration. By wintering over a few old plants and starting them in April or May, and propagating as soon as the cuttings are ready, a fine batch of plants can be had early in August, that will furnish a good supply of bloom or pot

FIG. 243. BEGONIA WELTONIENSIS.
(Pink Flowering.)

plants, at a time when flowers and flowering pot plants are scarce. By drying the plants off gradually when they are through flowering, and putting them on a front shelf under the greenhouse benches where the drip does not bother them, or on a back shelf in the greenhouse, or even in a warm potting shed, these begonias will keep splendidly, and occupy no valuable winter space. I have found two year old plants profitable, as they can be grown on into 6 inch or 7 inch pots, but after the second season I have not found the keeping qualities of the plants as reliable as younger stock. The Begonia Weltoniensis is a splendid bedder, and succeeds well in almost any position in light soil. Fairly light soil should be used for pot plants of this begonia. Other newer varieties, such as Begonia Vernon, Bruantii, Erfordii, Ingramii and other summer flowering types of Begonia semperflorens, will not compare favorably in my opinion with the two varieties first mentioned, excepting perhaps that these latter can be easier raised from seed than the Weltoniensis begonias. The seed, however, should be sown early in the spring, about February, to secure early flowering plants the same season.

The new hybrid type of Gloire de Lorraine Begonia, although beautiful and floriferous at almost all seasons, can scarcely be considered as a summer begonia. Although several new types and varieties of Begonia semperflorens have recently been introduced, at present there is still room for an ideal summer flowering begonia for florists; a want that may possibly be filled, as begonias are very susceptible to cross fertilization, a fact that many of our principal florists are taking advantage of, as is shown by the introduction of so many types and varieties of this beautiful and useful class of plants. But the ideal florists' begonia has yet to be raised, and like all other classes of beautiful plants to be found in the floral world, we shall never know when the highest possible point has been reached, so great and mysterious are the workings of nature, when assisted by art, as well as by the assistance of bees and other insects in hybridizing and crossing different varieties of flowers.

I have been pleased to learn during the last few days that the three varieties of begonias mentioned, viz.: Begonia Weltoniensis, Begonia Weltoniensis alba, and Begonia McBethii are again coming into popular favor, and, in my opinion, no florist should be without them on his greenhouse benches in summer, as their many good qualities for decorative purposes in general, still entitle them to a place in the front ranks of this numerous and useful class of plants. Many florists, who have dropped them from their lists, are again taking them up, ample evidence that they are still of

service, and that there is nothing yet to surpass them for general usefulness amongst summer flowering begonias.

And now a word on outdoor flowering plants in summer. 1st—Annuals, the prettiest, most varied and unfortunately, I must add, in many cases the most fickle and uncertain class of plants grown.

It is gratifying to know, however, that there has been, during the last few years, more especially on the part of seedsmen and seed growers, a greater effort made, not only to introduce new species, but to improve generally the various strains and types of these useful adjuncts to a florists' establishment.

Time will not permit me to but barely touch on the subject of annuals, as it is unnecessary for me to even mention the staple varieties of many of them, such as Asters, Sweet Peas, Mignonette, Nasturtiums, Stocks, Phlox Drummondii, Cosmos, as well as Anthirrinums, Petunias and Verbenas—the last three being now generally acknowledged for all practical purposes as annuals—as all of these are well known to all classes of flower lovers, as evidenced by the beautiful display now on exhibition in connection with this convention.

But there are a comparatively few new varieties and types that may, perhaps, not be as generally known and cultivated as

FIG. 2404. ANNUAL CHRYSANTHEMUM.

FIG. 2405. MALOPE GRANDIFLORA ROSEA.

those I have mentioned. Take first of all the annual chrysanthemum. The beautiful colors and markings, as well as ease of culture, good keeping qualities, etc., well entitle these to the notice of all florists. For table and room decorative work, more especially, these annual chrysanthemums will be found to be invaluable. By sowing the seed early in the season, their decided and pretty flowers can be had early in August and September in abundance.

Another species of plants that will furnish material for florists' use, are the Malopes and Lavaterus. These improved types of the Mallow class of plants will be found of great service for decorative purposes and for loose cut flowers. Malope grandiflora alba and Malope grandiflora rosea being the two varieties most useful to florists. Lavatera rosea splendens, Lavatera alba splendens and Lavatera trimestrie are good varieties, their large. showy, mallow-like flowers being often several inches in diameter ; and for a convolvulus shaped flower their keeping qualities are very good, as I have, by experimenting with them in this respect, kept their flowers and foliage quite

FIG. 2406. ARGEMONE GRANDIFLORA ALBA.
(Mexican Poppy.)

fresh for three days under treatment similar to what they would receive as cut flowers for decorative work.

Another class of annuals coming into favor are the annual rudbeckias, the beautiful brown and dark crimson markings of the base of the petals of these flowers makes them more acceptable than they otherwise would be, taking into consideration the almost objectionable and overdone appearance of many flower gardens, by the too general use of masses and rows of yellow flowers, such as Rudbeckia laciniata (Golden Glow) and the deep colored heavy looking sun flowers. Several very much lighter shades of these annual Helianthus or Sunflower have recently been introduced, their soft lemon yellow and almost white flowers making them less oppressive and objectionable as florists' flowers than the deeper orange shades of the older varieties of sunflowers.

There is one more annual I would like to mention, viz., Argemone Grandiflora Alba, or Mexican Poppy. Although the growth is coarse (3 ft.) the abundance of its pure white petalled flowers will especially commend it to florists, as it gives an abundance of blossom during August if sown in the open border in April. This plant has a habit of closing its flowers when on the plant at night and during dull weather, but when cut it remains open constantly. Although the stamens in the centre of the flower are yellow, it is of such a soft shade and texture that this feature is not as objectionable as it is for florists' flowers. For short time work it ought to be of value to florists, as large white flowers are so scarce oftentimes before the Asters make their appearance.

PERENNIALS.

I should like to have said a few words on perennials, but the time is so short and space will not permit except to say that the improvement in the class of plants are equally as noticeable as in that of annuals, and no general florist's establishment is complete without a collection of these useful and inexpensive class of plants. I have a few specimens of several of the varieties of plants that I have mentioned, amongst which will be found several varieties, such as Helianthus cummerifolia, Helianthus decapulatus nanus, that from their form and soft lemon yellow colors well recommend them to the notice of florists as useful summer flowering varieties.

In conclusion I would mention another class of plants that could be made of more service to florists in summer than they are at the present time, I have reference to Hardy Climbers, more particularly the Clematis. The beautiful colors and shades of those that are now offered, from the pure white of the Duchess of Edinburgh variety, C. paniculata and C. Henryi to the deep lavender color of Standishii or to the intense purple of the more common Jackmanii, will allow of no excuse for florists planting around and about their establishments—as we often see done—the common varieties of Ampelopsis and Clematis, when other kinds such as those I have mentioned might oc-

cupy to advantage and profit the places of the commoner kinds, and give results that would benefit their owners as well beautify their surroundings where planted.

I cannot close this rather lengthy, but I trust not altogether uninteresting, paper without again saying that although it is impossible and undesirable to supplant the queenly Rose, and I can almost say the kingly Carnation, in the estimation of the flower loving public, still there are demands on florists that will sometimes not permit of the very general use of these as florists' flowers, especially at this season of the year, which I trust will be an acceptable apology and excuse for these remarks from me on "Summer Flowers for Florists."

A NIGHT-BLOOMING CEREUS

FIG. 2407. CEREUS NYCTICALUS.

PERHAPS the cactus that is most heard of is the night blooming Cereus. But there are many plants which are wrongly credited with being such, The Queen Cactus or Phyllocactus Latifrons, is one which is very generally supposed to be, and is called a night blooming Cereus, when it does not belong to the Cereus family at all. It grows long, round stems, with thin, flat branches, from the edge of which springs the fine flowers. These are very large and beautiful, and as they open at night, the mistake of calling the plant the night blooming Cereus is quite natural.

All the Echinopsii are night bloomers also, and some think when the fine, large, trumpet-shaped flowers open, that they have a Cereus, but they are again wrong.

The Cereus grandiflorus, the true night-blooming Cereus, is a slender climber, and has no leaves at all, the stems being five and six angled, with short spines along the ridges. A fine wool comes along with the spines on new growth, and makes the plant distinct from many of the other slender climbing Cereus. Nearly all Cereii bloom at night, hence are night blooming Cereus, but the C. grandiflorus is queen of them all.

C. Nycticalus is a free bloomer, and its flowers are very large. A flash light photo of a fine bloom a foot across is shown in the engraving. It was taken about ten o'clock at night in the greenhouse where the plant stood. The stems of the plant can be seen close alongside the flower. A great many people visited the cactus greenhouse to see the flower when open.

Woodstock, Ont. J. H. CALLANDER.

WOLVERHAMPTON FLOWER SHOW

SIX TENTS FULL—WONDERFUL ROSES AND BEGONIAS—A FRUIT EXHIBIT INCLUDED

REPORTED BY

A. McD. ALLAN, F. R. H. S.

THE second finest flower show in England is held here annually, and was the chief attraction to the Exhibition grounds the past week, as it was held in part of the beautiful park in which the great exhibition is. The prize money this year comes to the magnificent amount of nearly $5000, besides a handsome silver challenge trophy and gold, silver and bronze medals.

The exhibits were staged in enormous tents most artistically, and competition is so keen that no trouble or expense is spared to make the most of everything. There were six tents, and exhibits were divided into classes, including groups of plants, the All-England section, gentlemen gardeners and amateurs, amateurs and cottagers, and table decorations. The prize collection in groups consisted chiefly of palms, crotons, ericas, ixoria, anthuriums, fuchsias, ferns, bamboos, rumera elegans, pandanus veitchii and others. The taste displayed in blending bloom and foliage and setting the plants so that the eye could take in all their elegance, and the entire absence of stiffness in the collection, even to the construction of a beautiful arch which formed part of this display, was remarkable.

Stepping into the rose compartment, England's flower greets the visitor with all the elegance of form and richness of color imaginable. It was hard to pick out the richest bloom in such a collection, but if any might be specially referred to I would call up Mrs. John Lang, A. K. Williams, Bessie Brown, Comtesse Nadaillai, Mildred Grant, The Bride, Duke of Teck, Her Majesty, Gustave Piganeau, Mrs. Cocker, Marechal Niel. But space in your journal will be disallowed me if I continue through many collections of seventy-two distinctive varieties in each.

In the "All-England plant" section the visitor felt inclined to walk up and down to dwell upon the magnificent bedding and veritable stacking of foliage so rich, and bloom most gorgeous, and still nothing out of place or appearing as if packed unduly. But here was the competition for the challenge trophy valued at $175, besides cash with it of $25. We find ixoria, phœnocoma prolifera, stephanotis, alamandas, anthurium skerziana, raising themselves in beauty among other plants as if claiming special attention from the passer-by But we dare not leave this paradise without referring to that charming flower that even the poorest peasant in the land may be enriched by, the sweet pea. These cut flowers formed a background that rose from near the ground to the edge of the tent as a mass of sweetness and beauty that almost tempted the visitor to cast himself into the delicious bed of all colors so blended as to stagger any but an expert judge. Jeannie Gordon, Grace Greenwood, and Lord Rosebery were present everywhere in that mass of glory, and the whole was enriched from that fact, for they seemed to appeal for a look from the visitor.

Begonias were beyond anything I had

FIG. 2408. FLORAL EXHIBIT AT WOLVERHAMPTON.

ever seen in the deep satin-like richness and delicacy of bloom and foliage, and the plants in the first prize collection were faultlessly arranged so as to blend in every respect. This blending of foliage and flower is a study that the English gardener is justly proud of, for he excels.

In the "gentlemen gardeners and amateur" class a bank in the shape of a half-moon consisting of a large variety of choice ferns, begonias in all shades of color, lilies, petunias, gloxinias, caladiums and many other remarkable specimens interspersed with graceful grasses, was one of the finest collections of the kind I have seen. Several magnificent groups in this competition must have given the judges thought in coming to a decision, for all were large and grandly designed in form of a bank.

Table decorations were specially fine, and quite different from anything of the kind we see in Canada. The competition was keen and arrangement most artistic throughout. The flowers used were mostly sweet peas, orchids, and carnations, none of them bunched, but blended with an easy grace and entwined with one or other of the finest foliaged slender climbing vines, asparagus, plumosa and sprengerii, some of which had the appearance of rich lace, gracefully worked as if the bloom was part of the vine, while here and there weeping grasses made up the picture.

Although this annual event is called a

FIG. 2409. FLORAL EXHIBIT AT WOLVERHAMPTON.

flower show, there is also a fruit and vegetable department, and here we find grapes, peaches, melons, figs and nectarines, all from hot-houses and all large and delicious if we may be allowed to judge by appearance. Passing to vegetables, the collections are all worthy, though they bear the impress of having been forced for the purpose of this competition. Specimens are small but clean, well formed, and as usual, skill displayed in setting before the judges in the most attractive form. Tomatoes were specially fine in appearance, large, smooth and in good color. But grown in hot-houses they do not possess the richness of flavor and the juice of ours.

Ordinary whitewash, as frequently used, has very little effect except to disfigure the trees. To destroy the insects and eggs hidden in the crevices of the trees very much stronger applications have to be used. Soft soap, reduced to the consistency of a thick paint, with the addition of a strong solution of washing soda, makes one of the most lasting washes. A solution of one pound of commercial potash in from two to four gallons of water is also very good.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

THE WINTER MEETING

THE Executive Committee of our Association met last Wednesday morning and decided upon, Tuesday, Wednesday and Thursday, the 2nd, 3rd and 4th of December, as the best dates for the annual meeting, to be held at Walkerton, Ont.

Some of our readers seem confused over the change of management, and do not seem to understand that the business management is now in the hands of Mr. G. C. Creelman, Parliament Buildings, Toronto, to whom all business letters or money orders should be addressed; and that the editorship of the Journal still remains, as usual, in the hands of Mr. Linus Woolverton, Grimsby, Ont., to whom all articles for publication should be sent.

THE USE OF X'S IN GRADING

The use by so many apple shippers of X to denote No. 3 apples, and XX to denote No. 2, has made it necessary to discard these for No. 1 apples as proposed on page 401.

It is unfortunate that the Fruit Marks Act should have countenanced the use of X's on second and third grade fruit, which could as well have been indicated by No. 2 and No. 3; but until this is rectified we find it necessary to save confusion to fall in line and begin our grades of No. 1 apples with XXX instead of with X.

Our grades in future for No. 1 apples will stand as follows:

XXX	=	apples	2¼	inches in diameter.
XX XX	=	"	2½	" "
XXX XX	=	"	2¾	" "
XXX XXX	=	"	3	" "
XXX XXX X	=	"	over 3	" "

Question Drawer

A Pruning Book.

1306. SIR,—Would you please recommend a book on trimming trees? I am starting a small orchard of trees of various kinds, and would like to consult the best authority.

MRS. H. C. CORSON.

Middlehead, Cape Breton.

Thomas' American Fruit Culturist gives much general information on the care of the fruit garden, including much about pruning; but on the subject of pruning alone, probably the best work is Bailey's Pruning Book.

Robson's Crab.

1307. SIR,—I send you a seedling crab possessing some good points, viz , earliness, size and beauty. The tree is symmetrical and very productive. The season is the middle of August.

W. M. ROBSON.

The crab seems to be all that is claimed for it, but in these days crabs are not wanted in sections where the apples succeed. The sample is 1¾ inches in diameter, too small for an apple and too large for a crab. At any rate crabs are only in demand in cold sections where the apples are not so hardy. Possibly, if the tree is very hardy, this might be valuable for the extreme north.

Plans for Improving Home Grounds.

1308. SIR,—I am desirous of some information about fitting up a lawn. I have purchased a piece of ground 33 x 30 feet, adjoining my present premises. How would you lay it out, and what are the most handsome trees and shrubs to plant?

Hagersville. JAS. SHELDRICK.

REPLY BY C. E. WOOLVERTON, LANDSCAPE ARCHITECT, GRIMSBY, ONT.

So much depends upon the surroundings that it is impossible to give any reliable advice without a personal visit. Trees and shrubs are planted about a place to hide objectionable views, to screen the occupants in part from public view, and to lend picturesque beauty to the whole. The size of the lawn described is a little too narrow for a tennis court, which requires 36 x 78 feet; but it would afford an excellent croquet lawn, besides giving room for a bowling green, and still leave plenty of room for grouping of trees and shrubs. A few elms, and maples would be excellent trees for shade, shrubs and creepers should be grouped in such a way as to hide the fences and boundary lines, and choice exotic trees and shrubs used to lend attractiveness and color to the borders.

For the best results one should have a plan carefully drawn to a scale before beginning any work of this kind.

Introducing a New Fruit.

1309. SIR.—On the advice of Mr. G. C. Caston, of Craighurst, I write you about introducing a new peach, known about here as the Blood Peach. Ought I to send it to the Horticultural Farm, and would they avoid propagation from it. To whom should I send samples?

Port Colborne. ELIZABETH F. AUGUSTINE.

First, you should send samples to the members of the Committee on New Fruits of the Ont. F. G. A. The names of the Committee are: L. Woolverton, Editor Canadian Horticulturist; H. L. Hutt, O.A.C., Guelph, Professor of Horticulture; and W. T. Macoun, Horticulturist, Central Experimental Farm, Ottawa. It would then be noticed in their annual report. Secondly, samples should be sent to prominent nurserymen, who would soon set a price on the control of the variety if they saw value in it.

Varieties For Home Garden.

1310. SIR,—I want to plant sixteen cherry trees, and shall be obliged if you will advise me what to plant. I already have Montmorency, Richmond, Dyehouse, English Morello, Windsor, one of each. I also wish to plant five or six plums, and already have Reine Claude, Red June Niagara, Yellow Egg, Burbank, one of each. I want to add

Abundance because it is early, or some other very early kind, the balance I want for about last half of September or early October. I also want fifty peaches, I already have Fitzgerald, Hill's Chili, Triumph, Crosby, Stewart, two of each. I intend to take chances on a few of early and late Crawford. The balance of the fifty, say forty I do not know what to do with, I want hardy trees but I also want large good fruit. I planted the trees I now have in May 1901, and allowed two peaches on the Triumph to mature this year, and they were very nice in color and quality though not large. My field is pretty well protected from south and west and by the time the trees are three or four years old will be better protected. I may add I am somewhat inclined towards the Diamond, Grand Duke, Monarch and Yellow Gage plums, figuring from nursery catalogues. My intention is to plant all these trees this autumn, of trees in size four to five feet. T. A. SNIDER, Cayuga.

Locality and personal taste enter so largely into such a question as the one proposed by Mr. Snider, that it is scarcely prudent for us to name varieties in reply. It would be far easier to name varieties for a commercial orchard, because usually there is just one feature to consider, viz., which is the most profitable? The following are suggestions only of varieties which might be added to Mr. Snider's list.

Cherries—Cleveland, Black Tartarian, Knight's Early, Napoleon, Reine Hortense, May Duke, Royal Duke.

Plums—Bradshaw, Washington, Quackenbos, Diamond, Grand Duke, Geuii.

Peaches—Sneed, Greensboro, Yellow St. John, Crawford, Elberta, Smock and Salway.

What to Grow in a Small Greenhouse.

1311. SIR,—I have made a small greenhouse, about 30 x 15. What would be the best paying crop I could put in to bring a quick return? Would lettuce and onions pay? What are the best kinds and management? Would cucumbers pay, trained against the bars of the roof on the north side? If so what heat and treatment would they require, and would there be any sale for them by Christmas? C. POULLOY.

REPLY BY WM. HUNT, O. A. C., GUELPH.

Lettuce and radishes would be the best paying crops as there is a good demand for them in winter. A few onions might pay, but the demand for them would be more limited.

The best kinds of lettuce for forcing are the Grand Rapids Forcing and the Nonpariel varieties. There are several good varieties of radish for forcing, New Rapid Forcing, Triumph and Scarlet White Tipped, being three good kinds.

Cucumbers pay well in winter if properly grown and near a good market like Toronto. Use rich soil, composed of rotten sod from loamy soil. Two parts of this mixed with cow manure will make a good compost for them. A depth of four to six inches of soil is plenty, but give each plant at least three square feet of soil as the roots spread over a large surface. Cucumbers like plenty of water at roots and syringing once or twice a day. Use tepid water or lukewarm. Liquid cow manure and a thin mulch of rich soil should be given when the roots show on the surface of soil. Temperature 65 to 70 at night, 70 to 80 in day time.

How to Ship to Foreign Markets.

1312. SIR,—I wish to make a trial this year of shipping apples to England, beginning with the Gravensteins. The Department of Agriculture, Ottawa, has advised me to consult you in reference to the matter of shipping and especially in the securing of cold storage facilities Any information that you may venture to furnish will be gladly received by me, as I am entirely without experience in shipping to Engiand and do not know anyone in this immediate vicinity whom I could consult to advantage.

Port Dalhousie. J. T. WHITE.

This is an easy thing if there is a little cooperation. The first thing to do is to make up a car lot, and if several shippers combine, and constitute one of their number the Secretary, it will be an easy matter to make a shipment every week or ten days. Then a reliable consignee in Great Britain must be decided upon, and the line of steamers most desirable for reaching him. Correspondence with the consignee should be had long in advance, in order to secure an interest in the class of goods to be forwarded; and with the steamship agent to secure the required space. Then the agent at the railway sta-

tion should be consulted, and he will secure a through bill of lading to the foreign port, a copy of which must be at once forwarded to the consignee, so that no delay shall occur in his getting possession of the goods. A full list of the goods, with grade marks, should also be forwarded to the consignee. If cold storage space is needed it must be calculated for in advance, and in estimating the amount required it will be convenient to know that a bushel equals about two cubic feet of space.

Our Fruit in British Columbia.

1313. SIR,—I see no reason why this trade could not be developed and possibly several shipments made every season. The grapes shipped in previous years have arrived in good condition, packed properly in suitable cars; a two weeks journey they ought to carry all right. Will you kindly think the matter over and advise me at the earliest possible date if you could supply the fruit. You know the contents of a car, and freight rate, and could then quote a price delivered. Small packages always preferred.

Vancouver B. C. C. A. SCHOOLEY.

At present the distance, and the expense of transportation, prevent our shipping grapes to British Columbia. We shall not however give up the hope that in a few years, we will have such reasonable rates both at home and abroad, that we can reach almost any of the best markets of the world.

Fawcett's Seedling Apple.

1314. SIR,—I herewith send you a sample apple which I think worthy of your attention. You know that every parent thinks his crow the whitest, and perhaps that may be the way with me and my apple. However, this apple is a seedling. The enclosure is a sample of the first fruit, which speaks for itself; but I am sorry I have to send it before it is ripe, as a wind storm last night brought down all but three. I fear it may be found a little too acid. It will clearly be a winter variety. The tree is perfectly hardy and a good grower. I am sure the form and color will commend themselves.

Ottawa. G. H. FAWCETT.

A magnificent looking apple, very large, bright red in color, over a green ground, and of excellent quality for dessert. It seems to be in season in October, and we know of no equal to it as a table apple of the same season.

Triomphe de Vienne.

1315. SIR,—I am sending two pears by to-day's mail. One of them is Triomphe de Vienne, The tree bore fruit for the first time this year, and it was sent to me by Ontario Grower's Fruit Association in the year 1891. There are about more than one dozen on it. Tree is very vigorous, and its branches are very thick and strong, and leaves are very dark green.

The other pear is Idaho; it also bore fruit this year for the first time and the tree was sent by the Association in 1892. It seems not doing well, branches poor and short. The sample is rather inferior to what I expected. Its shape is much like Sheldon, but color is different. Catalogue says it is very large, and I rather think it is not correctly named. There is just six pears on the tree.

I intend to enter Triomphe de Vienne at our fair on the 30th Sept. and 1st October, for "Any other variety".

I would like to know if any other subscriber got that same pear in 1891 in Stratford or vicinity. Please give a reply by next mail and oblige.

Stratford. ROBERT MCLAGHAN.

P. S.—I may inform you that Triomphe de Vienne tree is 15 feet high, 9 inches circumference six inches above the surface.

Idaho tree is only 8 feet high, 5 inches circumference. The Canadian climate and my land being clay soil may both affect the growth of the latter tree.

The Triomphe is a fair sample of this excellent pear, as we have grown it at Maplehurst, and we consider it a valuable variety for Canadian orchards. So far we do not hear that it has been grown except by those who have received it from our association.

The Idaho is probably true to name; the shape is correct, except that it is usually corrugated at the basin, and usually quite large in size.

In our opinion it was very much over lauded, and is of little use in Ontario. Some samples of it much resemble the Sheldon, but it is not equal to that variety in quality for dessert.

Open Letters

FRUIT GROWING IN QUEBEC

WORK ON JUDGE CARON'S FARM—BLACK KNOT—WINTER PROTECTION

A LETTER FROM H. P. CARON, L'ISLET, QUE.

SIR,—I always read your journal with the greatest interest. As the following might prove useful to some of your readers I will report on the crop of fruit for the lower part of the Province of Quebec. We have had a great deal of rain, almost every day. Also, in my orchard, where there are about 3000 trees, I have not seen caterpillars more than two or three times. I sprayed this spring with Paris green ¼ lb. to about 24 gallons of water mixed with one pound of lime. The strawberries have done very well, they are the James Vick and Sharpless, cultivated in rows 3 feet by 4. They fruited in great quantities, were free from all kind of of diseases, but I must say they were very acid. I consider this due to the heavy rains. Our gooseberry hushes were overloaded. We cultivate in single rows, one single row between the apple trees, 6 feet apart. They are the "Smith Improved." We never have mildew. I spray with Paris green once in the beginning of June and once after the crop is removed. At the end of August I have a heavy pruning performed, removing the smaller shoots, only leaving two new shoots and cutting away the two oldest branches, which have been fruitiug (this is the renewal system), and shorten the end of all the long branches. This gives great force to the gooseberry bushes, lets the air freely in, prevents the spread of diseases and the hatching of caterpillars. We sold the gooseberries from 20 to 30c. a gallon.

The raspberries were very plentiful—White, "The Golden Queen," red, Cuthbert and Marlboro. They took a first prize at the late Universal Exposition at Paris. We cultivate in rows 6 feet both ways. The fruit was not as firm as usual, due to the rain. The blackberries are covered with fruit. Our cherry trees were a great success, some trees of nine years old giving 10 gallons and more ; but I cannot say how much a tree produces really, because we are surrounded by a lot of poor people who eat freely of our fruit, not being invited to do so. In about 500 cherry trees I found this summer not more than 10 or 12 black knots ; but I must say that our plum trees are terribly affected by the black knot. The trees are loaded with plums. As soon as the fruit is picked I shall cut off and burn all the knots, and spray with a ¼ pound of Paris green to 24 gallons of water, with one pint of petrol oil. All the trunks of our trees have been washed with the same preparation. I think that the very wet weather has much to do with this disease, the knots are different from those of the cherry trees. The plum trees to look at seem in perfect health. Our potatoes this year are very good and yielding immensely, being planted on sandy hills ; but our cucumbers and melons are a complete failure. Last year we had some melons of the best quality, the only covering given was a thin cotton sheet at night. Our flowers are sad to look on, and we must

be content with dahlias, sweet peas and sunflowers. In August we have had rain, very high wind, and even frost. Our pear trees are doing very well, and I have succeeded in wintering out doors two peach trees. With proper protection I expect to succeed in having fruit. This part of the Province is particularly adapted to the culture of cherry and plum trees; they require care, attention, washing and heavy manuring. Every autumn we put a few rough boards to prevent the freezing of the roots. The trees are latted at the beginning of October to prevent the bark being eaten by moles, etc. The laths are removed about the middle of May. The crop of apples is very large, but the apples are stained, due to the extreme rain.

Cats are kept to eat moles, rats, mice, etc., and birds never disturbed, as they eat so many worms. The currants have been neglected, as we cannot find pickers.

GOOD PRICES FOR EARLY APPLES IN WOLVERHAMPTON

PEARS FIFTEEN CENTS A POUND—PEACHES SIX CENTS EACH—ASTRACHANS EIGHT CENTS A POUND

A LETTER FROM A. M'D. ALLAN, F. R. H. S.

THE first apples I noticed in the market of this season was Astrachans from Spain, which sold retail at eight cents per pound. They are fair in size but lack the color of ours, are coarser of texture and not so juicy and sprightly.

The Keswick Codlin is used for stewing when half grown and many even eat it out of hand when no larger than a walnut. The fruiterers all had it for sale at four cents per pound, the first week of this month.

August 8th, I observed quantities of Yellow Egg Plum in the market at four cents per pound, and was curious to know what on earth anyone could use it for when perfectly hard and green and before attaining full growth. It is pickled, and also made into jam for pies; put up in pots it is kept sometimes for winter use. Osband s Summer Pear from Jersey reached market on the 9th, and brings twelve cents per pound, very small, and where soft is mealy and flavorless. Small Green Tyson, also from Jersey, brings twelve cents per pound, and like others lacks that fruity flavor we are used to. Green Gage Plum is good size and we recognize the qnality, but it lacks juice. It comes from France and brings twelve cents.

On the 12th, Barletts, from Jersey, light green, medium in size, dry and flavorless, bring fifteen cents per pound. Jargonelle (English), about size of quarter grown Vicar, slightly russet, green, knotty, twelve cents per pound.

The Jersey Pears are packed in boxes with brown paper between layers, not wrapped, but samples are of even size throughout and all clean. Plums are also packed in a similar manner in small boxes usually abont twenty pounds each.

On the 18th, some English Astracans appeared, but the samples are smaller than the Spanish and insipid in flavor.

Peaches from hothouses are very fine in appearance, but this luxury costs the consumer six cents each. The skin is much thicker than ours, flesh firm, but lacks the juice. Apricots bring eight cents each, and specimens are grand, large and high in color. I thought it a pity to taste these, as the sight of a box containing a single layer,

with each specimen folded in clean white paper was enough to feast the eye upon, and my pen shall not record a word against the beauties. The fruiterer knows how to attract the customer and presents this picture prominently in his window with the spotless paper folded back loosely from each specimen to shew the rich contrast of color. Our hand naturally feels for our purse, but no, let us leave it at that, and look at those grapes at from 12c. to 28c. per lb., according to size, all luscious. Yes, grapes are very fine, but of course all are hothouse varieties, and such is the English taste. I cannot wonder that we cannot find a market here for ours, and we will not until a taste is cultivated among a class of consumers who cannot afford to pay high prices.

Although there is so great a demand for fruits of all kinds here, I can see clearly that it pays to make the brands before shipping, and whatever these brands may be let them always be perfectly even. No matter what time and labor it may cost, separate the samples with the utmost care, and do not let a choice brand be spoiled by a single spot or sample under size or lacking the points of its kind to make the brand perfect. If you wish to pack spotted fruit we might be tempted to say select in accordance with the number and size of spots, having brands for single spot and so downward ! ! A word may be sufficient to convince some packers, would that all might heed us.

I cannot but feel that fruit growing has become a partial failure in this country because growers neglect their orchards. We generally hear them say, " What is the use in trying, as these Canadians will undersell us in all our markets with our own varieties of much finer size and color." But where will our growers be in a few years with neglected orchards? Of course our bright sunlight will always do its duty, but what of that if the subtance is not supplied to the soil, and if the trees are not kept free from filth and relieved from a burden of useless wood ?

I walked through the market on farmers' day lately, and was struck specially with the fact that almost every farmer was not only dressed in his best, but had a buttonhole bouquet. He looked natty and tidy, and invariably had well blackened boots. I am told this is also the case in every village market, and is worthy of note, and as it should be.

PEARS IN COLD STORAGE AND OTHER FRUIT MATTERS

A LETTER FROM MR. R. BRODIE, OF MONTREAL.

SIR,—With reference to the Flemish Beauty pear in cold storage mentioned in the July number of the Horticulturist, I may state that the pear gathered and packed under the same conditions as those put in chemical cold storage and stored in our own cellar, ripened up nicely and gave good satisfaction to the purchaser and commissioner.

The apple crop is very good in this locality, Fameuse, Wealthy, Ben Davis, Oldenburgh above the average. When trees are not well sprayed, there are lots of apple spots (fungi); the worst insect enemy is the apple curculio, spraying has no effect. I was surprised to see the effect of the severe frost of the 10th May on the plum trees. The frost did not injure the first buds of most of the European varieties of plums (Prunus Domestica) leaving us a very good

crop; while the fruit buds of American varieties (Prunus Americana) were very much destroyed with the frost, also the Japanese varieties, Abundance, Burbank and Willard. Would you kindly give the dimensions of the Grimsby apple case. I have been using a case the same as the California case holding about 40 lbs. of apples.

The apple box used by us in exporting apples measures 10½ x 11½ x 22 inside measure and holds about one bushel of apples. If this were taken as the outside measure it would mean a box holding about 40 lbs. of apples, and indeed be practically the same as the California apple box. We have preferred to take these as inside measurements, because in packing we can just fit in the apples 4 x 4 x 8, of No. 1 stock, 2½ inches in diameter; or a total of 128 apples in a bushel box.

CORK INTERNATIONAL EXHIBITION, 1902

A LEITER FROM MR. E. H. WARTMAN, DOMINION FRUIT INSPECTOR, MONTREAL.

SIR,—It may be your pleasure to publish a few lines from my note book. As Superintendent of Fruit at International Exhibition, Cork, Ireland, my time is fully taken up telling the people here how successful the fruit growers of Canada have been in the cultivation of various kinds of fruits. When I tell them we can grow apples at a profit at one dollar per barrel, and grapes, pears, plums and peaches, a ten pound basket at thirty cents, they look astonished. I saw some very nice peaches in a fruiter's window. I went in and priced them; they asked 6d. to 1s., or 12c. to 24c. each. Although my mouth seemed to water, I came away minus any. I have visited a number of "as they call them" orchards in the vicinity of Cork. They all have twelve foot stone walls around them. This wall serves a two-fold purpose, for concentration of heat as well as a good support to tack vines or various kinds of trees to. I tell them of our hundred acre orchards that it would be impossible to put a penitentiary wall around, as we can put our stone to better use; but they say unprotected orchards here have all their fruit stolen. Then I tell them to try Canada, where thieves seldom break through and steal. The fruit growers of our Province will see the people here have many discouraging things to contend with. The visitors to our pavilion are most unanimous in saying it's the best show on the grounds, which is a pleasure for us Canadians to hear, and gives encouragement still to do better in the future years.

I have about 20 kinds of our apples on table yet in a good state of preservation this 18th day of August, 1902. On the 8th of August I made a thorough examination of a number of boxes of apples with the following results: Baldwins, 56 per cent., sound; Phoenix, 46 per cent.; Golden Russet, 57 per cent.; Canada Red, 55 per cent.; English Russet, 86 per cent.; Rox Russet, 95 per cent.; Nova Scotia, Nonpareil, 86 per cent.; Mann, 80 per cent., sound. I consider this speaks well for keeping quality of our apples, as this lot were repacked out of barrels that had been pressed very hard for export and badly bruised. Had they been carefully selected from trees, cooled, wrapped and boxed, results would have been better. It is very natural for people of this country to ask me how we keep our apples so long. I tell them in the first place it is the climate that makes our apples of so good keeping quality, in fact the best keepers in the world; tha

we pick our apples carefully and keep them in cool air, which prolongs their lives. Now there is one thing I have heard about our apples in England and Ireland which I dislike very much, to the effect that our apples are dry and woody. One gentleman said, "I don't know whether they are American or Canadian, but wish they would keep their apples at home." Now this seemed to warm my Canadian blood and I commenced to cut a few of such apples as Spy, Wagoner, Spitz, reminding them they had been gathered over ten months ago, which would result in a certain amount of good being evaporated, and they unanimously said "marvellous, marvellous." But can we wonder at people saing our apples are dry and woody when so large a percentage of our apples are Ben Davis? I fancy this is the secret of such remarks; their beautiful color and symetrical form attracts the buyer.

Their shape, color and keeping quality is unsurpassed, but what good is an apple without lots of well flavored juice? It is said by some one Ben Davis improves while crossing salt water, but I think this statement is a farce. How many apple growers in Canada lay aside carefully Ben Davis for home use? Fruit growers of Canada, it would pay you to consider this subject carefully and come to conclusions very soon on such an important subject. Hoping these lines may be of profit to some one, I remain, yours faithfully, E. H. WARTMAN.

A SPRUCE GALL LOUSE

DEAR SIR,—I have read Mr. G. E. Fisher's letter in September Horticulturist about the application of fumigation methods to the destruction of the Spruce Gall Louse. So far as I know the life story of this insect the gall louse passes the winter about the base of the bud in a half grown state, and not in the egg state. I was not aware that the louse was viviparous. I was under the impression that the louse, not long after being hatched in May, formed a gall at the base of the leaf, and remained within the gall until the middle of August, when it emerged to lay eggs. I believe, with Mr. Fisher, that with small shrubs it would be quite practicable to fumigate, but how would he pitch his tent when he had rows of tall spruce trees to deal with? I have found the whale oil and soap and tobacco solution effective if applied when the young gall lice were moving. This movement occurs twice a year, on hatching from the eggs about May 10th and August 20th.

I should think, also, that these dates would be the best for effective fumigation, for the lice are practically living in gas-tight cells from June 1st to August 10th.

"A SPRUCE LOVER."

News from the Societies

Kincardine.—The Horticultural Society of this place held their Sixth Annual Exhibition of Pot Plant and Cut Flowers in the Town Hall on Friday last. The display was first-class which proved that the efforts of the Society in the encouragement of this refining recreation is being appreciated by old and young.

The display consisted of common and rare plants so nicely arranged on the tables that the blending and harmonizing of color and form gave an additional beauty to the common without detracting from that of the rare. There were rubber plants and palms, ferns, asparagus, sprengeri, geraniums, gloxinias, and begonias, with hosts of other plants no less beautiful. The Otaheite orange trees, one with ripe fruit, was to many a great curiosity. Some of the plants and trees exhibited required a great deal of care and skill in handling and the wonder is that only one mishap occurred in the handling of so many hundreds of pots and vases.

On the platform were some gorgeous specimens of vegetation. Whereever a position was to be had that could add dignity to the surroundings a magnificent tropical or greenhouse plant or tree was to be found.

A rubber tree of about seven feet in height with its bright olive green, leathery leaves was a point of admiration. Others as beautiful tho not so large filled positions no less inferior.

A branch of a peach tree laden with ripe fruit (24 peaches in a cluster), caused many to stop and make the enquiry, "Can such peaches as these be grown in Kincardine?" Mr. E. Miller is the grower. A snap shot was taken of the prolific branch.

A very large agapanthus in full bloom was a much admired plant. In the center of the platform was a tall and graceful spike of campanula with its scores of bell-shaped mild lilac flowers. A tripod with a beautiful jardiniere just visible through a maze of asparagus sprengeri, and a grand vase with choice asters held prominent positions. These with castor beans, sword ferns, cacti, etc, rendered the platform a "thing of beauty." Some music to enliven and cheer the admiring spectators was given by the Misses Smith and Henry on the piano.

Woodstock.—Another very successful garden meeting of the Horticultural Society was held last night at the residence of Mr. Wm. Grey, Graham street. The attendance was unusually large, proving that the holding of garden monthly meetings brings out more members and their friends than when the meetings are held in the Council chamber. Those present at last night's meeting spent a very pleasant hour between seven and eight o'clock, seeing Mr. Grey's vegetable, fruit and flower garden, and walking about his well-kept lawn. The distinctive characteristic of Mr. Grey's flowers is that a considerable proportion are old-fashioned or those that were common a quarter of a century or more ago Many of these are now popular in the most modern gardens and they were seen last night with evident pleasure. Several evening primroses attracted general attention as they came into bloom while looking at them. But Mr. Grey's fruit and vegetable gardens are quite equal to his flowers, and he has an abundant crop.

At eight o'clock the regular monthly meeting was held in the spacious parlor. The chief business was the making arrangements for the forthcoming horticultural exhibition. The President reported for the committee in charge that they had selected the market building as the place for holding the exhibition, and this was approved by the meeting. It was also decided to hold the exhibition on Wednesday and Thursday, the 20th and 21st of August. A large committee to carry out all the arrangements was then appointed, including the following: Mrs. Davidson, Mrs. Hoare, Mrs. H J. Finkle, Mrs. Dawson and Miss Moyse, together with the President, Secretary and Messrs. Woodroofe, Richmond, Sproat, Calender, Hoare and Dawes. This committee will meet at an early date.

THE FIRST SOCIETY.

The President, on behalf of the Society, thanked Mr. Grey for his kind invitation to hold the meeting on his grounds and for the pleasure which had thereby been afforded the members of the Society and their friends. He also requested Mr. Grey to give a sketch of his horticultural experiences in Woodstock and of the formation of the first horticultural society. The latter, Mr. Grey explained, was formed, according to his recollection, some time in the forties. The late J. T. Cottle was a prominent member, and the first exhibition was held in his house, then a frame one, which subsequently gave place to the brick structure known as Altadore. Two subsequent exhibitions were held, the latter being a failure After that the Society seems to have collapsed, but it was revived in the fifties, and if we recollect aright, also in the late seventies, prior to the formation of the present organization later on. Mr. Grey mentioned a Mr. Jones, a blacksmith in the east end, as one of the pioneer settlers who indulged in flowers. The gentry, a large number of whom were located in Woodstock and vicinity at that time, had also creditable flower gardens. The Cottle's, the ladies of the Graham family, George Alexander, Deblaquires, Vansittarts, General Murray and others cultivated flowers and helped to give an impetus to their general cultivation in the then "clearing" and subsequent village, town and city of Woodstock. Mr. Grey also mentioned the formation of the first Agricultural Society, whose exhibition was held for some time on the Bettridge property below Riddell street, later on what is now Victoria Park, then to the grounds west of the present C. P. R. railway, and finally to the present fair grounds on the Alexander property north of the city.

Mr. Grey's story was listened to with interest and pleasure by those who heard him last night, and at the close he was accorded a hearty vote of thanks. The serving of light refreshments by the venerable host, and Miss Sharp brought to a close an unusually interesting meeting of our local Horticultural Society.

Fig. 2450. The Triumph Pear

THE
CANADIAN HORTICULTURIST

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THE TRIUMPH PEAR

(TRIOMPHE DE VIENNE.)

SOME years ago our Association sent out among its members trees of the Triomphe de Vienne pear, asking them to report on its merits. Previous to this we do not know of its being grown by any one in Ontario. The tree which was sent to the writer has now been bearing fruit at Maplehurst for several years, and we are so well pleased with it that we have made it the subject of the frontispiece for this number.

Like the Anjou, Bartlett, Duchess and many other excellent kinds, it is of French origin, but it finds in Ontario a congenial soil, and promises to be an excellent commercial variety. One point in its favor in these days when we are so given to value everything in dollars and cents, is its large size and showy appearance which would command attention in any market, but, in point of flavor, it is not equal to many other well-known kinds.

The tree appears to be a fine healthy and vigorous grower, and, consideriug the size of the fruit, may be said to be productive.

The flesh of this pear is creamy-white in color, buttery in texture, and rather juicy, while the flavor is sweet and very good. In season, it is later than the Bartlett, coming in between the 15th and 30th of September. The season of maturity, however, is of less importance these days than in the days before cold storage, for by this means we can keep tender pears for many weeks after their natural season of maturity.

One of the most important questions which we can ask about a new fruit is its shipping qualities, for, if in ordinary cold storage we may, without too great risk, send a fruit to a foreign market, we may plant it with the assurance that, if our home markets become glutted by over production, as indeed they are certain to be, we may yet dispose of our products across the sea at reasonable prices.

Looking over the list of pears commended as desirable for planting in Ontario, with a view to export, we find in our experimental plot two others which seem worth adding, namely the Hoosic and the Pitmaston, the latter of which we are inclined to look upon with especial favor, and will take an early opportunity to describe for the benefit of our readers.

Mr. McLagan, of Stratford, sends us a sample of this pear grown in his garden from a tree sent him by the Ontario Fruit Growers' Association in 1891. He finds the tree healthy, vigorous and productive, and values the fruit quite highly. We shall be pleased to hear from any other members of our Association regarding its merits or its faults.

Notes and Comments

WOODSTOCK FRUIT AND FLOWER GROWERS

Fig. 2451. (Leave from our Artist's Notebook.)

RETROSPECTIVE

IN 1850 Woodstock became a town, and in 1901 a city. The growth has been most rapid, owing to a combination of favoring conditions, for example, its beautiful situation, the net-work of railways centering here and giving convenient shipping privileges, the consequent important factories, such as Mr. D. W. Karn's organ and piano factory, the Woodstock wagon factory, the Bain wagon factory, the Anderson furniture factory, the Hay Sewing Machine Co., the Stewart stove works, etc., industries which suggested its title "The Industrial City."

Her citizens point with considerable pride to those pioneer noblemen whose presence in early days gave character to the social life of the town, such men as Admiral Vansittart, whose residence at Eastwood is full of curios and paintings by great masters, Lord de Blaque, Rev. Wm. Bettridge, distinguished both in military and clerical circles, and others.

A RECENT VISIT

THROUGH the courtesy of our respected director, Mr. J. S. Scarff, ex-Mayor of the town, we had the privilege of seeing the town on a bright October day, and of a

FIG. 2452. PIONEER NOBLEMEN.

carriage drive among the fruit and flower growers of the neighborhood.

A day spent in company with one so familiar with the place and people was indeed a treat, and led one to hope for another such day when we might see many others on our list of those who have helped to forward the interests of horticulture, and from whom we might gather many interesting notes for the benefit of our readers.

THE RIGHT MAN IN THE RIGHT PLACE.

WHAT a satisfaction it is always where we find the man who is just fitted for a certain duty! and in Mr. J. S. Scarff we found such a man to forward the interests of our Association at Woodstock. To quote from the Sentinel-Review:

FIG. 2453. EX-MAYOR SCARF.

"Mr. James S. Scarff has been a resident of Woodstock since 1852, except for two years spent in California. In early life he carried on a carriage business with his father, the late William Scarff, but latterly has lived retired. He has been prominent in municipal matters, serving several terms as councillor, deputy-reeve, and one term as

mayor of the corporation. He has been secretary of the Board of Trade and Agricultural Society, and is now secretary-treasurer of the Horticultural Society. Mr. Scarff was chief engineer of the fire brigade at the time it rendered assistance during the big Ingersoll fire, and he can look back upon a life associated with most of the public movements during the last third of a century."

"Yes," said Mr. Scarff, as we drove along a country road, "I have been here for fifty years, and have always had my own way to make. I made my first capital about thirty-five years ago, when, aside from my trade, I rented about one-fifth of an acre of ground and raised plants of cabbage, cauliflower and celery for sale. I was successful in disposing them direct to private homes in the town for their gardens, and actually banked $235 off that one-fifth of an acre in one season. This encouraged me to do a considerable amount of market gardening, the produce of which I always sold direct to consumers, and thus got full value."

How true it is, that to excel others we must take opportunities which they neglect. Now Mr. Scarff has reached a position of wealth and affluence, and he could point with pardonable pride to a street lined with comfortable homes placed there by his capital.

WOODSTOCK FLOWER LOVERS

IT was in 1885 the first Horticultural Society was formed in Woodstock, but but for eight years it had disbanded, when, in 1895, we were instrumental in the formation of an affiliated society, of which the success is most worked. Mr. Scarff has been secretary almost from the beginning, and upon him has therefore devolved a great share of the responsibility.

FIG. 2454. COUNTRY ROADS ABOUT WOODSTOCK.

It was with great pleasure that we responded to the invitations of those past presidents to go over their private gardens, viz., Mr. T. H. Parker, Mr. D. W. Karn, Mr. G. R. Patullo, the latter of whom has been re-elected for 1902. Mr. Parker's cold grapery is a success, and there were still hanging fine bunches of Black Hamburg, Rose Chasselas, Chasselas Marque, and Muscat Ham-

FIG. 2455.

"A City Garden" scene, which forms the centre of the above group, is taken from the gardens of T. H. Parker, Vansittart Avenue.

burg. This latter is most delicious in flavor and worth all the trouble of growing, for our ordinary varieties are very inferior to it. No wonder Mr. Parker carries of so many prizes at the Fairs for choice grapes.

ARCHING HIS ROSES

MR. PARKER'S plan of arching the flowering branches of his outdoor roses is commendable. He plants them 4 or 5 feet apart, a long upright growth of young wood, which he then bends over from each plant to form an arch, tying the over-lap with string. The arches thus formed are full of the finest show of bloom, and form a beautiful picture. These are of course renewed every two or three years.

EVEN PEACHES SUCCEED AT WOODSTOCK

SOME years ago, when the late Prof. J. E. Wells was Principal of Woodstock College, we sent him a few peach trees to plant in his garden, wondering at the same time if it were possible to grow so tender a fruit at this the highest point in Ontario. Imagine our surprise on this visit to find not

FIG. 2456. DOYLE BROTHERS' GREENHOUSES.

only Elberta, Fitzgerald and other fine varieties growing and fruiting in the gardens of Mr. Karn, Mr. Parker and Mr. Patullo, but also to find in Mr. Pitman's orchard, far up the highest point, a fine thrifty orchard of the finest varieties, and yielding excellent crops. We noted the same thing in Mr. McLean's orchard; he grows small fruits, pears and peaches in abundance, and unites with fruit-growing the business of fattening and shipping poultry, a good combination, and apparently very successful.

One advantage these men have over us in fruit-growing centers is that they have a fruit market at their very doors, and can sell direct to retailers, while we have express charges and commission to pay, much reducing our profits.

THE ANJOU PEAR

DOES particularly well in Mr. Pitman's orchard, situated on this high elevation. One fine old tree was pointed out, a standard about twenty-five years planted, which averages a yield of three or four barrels per annum, and all fine, clean large sized fruit. "What can you get for such pears here?" we asked him. "Well, about 25 to 50 cents a bushel. I just put them up in barrels and sell them in Woodstock."

"You should export such pears as those," we said. "That variety is one of the very best export pears, and often brings as much as $2.00 a half bushel case on the Glasgow wholesale market."

"The trouble is," said Mr. Pitman, "nobody else here is exporting pears, and I would not know how to go about it alone."

Of course that is the trouble, and until our fruit growers learn to act more in concert, they will continue to be the willing subjects of speculators.

A certain number of fruit growers in each district, say eight or ten, should agree together from the very start in their business, by planting certain special varieties of apples, pears and peaches, suitable for export, so that when they come into bearing, they can make car lots for export, and work their business independently of speculators. They should elect a president and secretary, and secure the lowest through rates to the best markets, and agree upon a consignee who will give them honest account sales.

THE ONTARIO APPLE

SUCCEEDS SPLENDIDLY WITH MR. PITMAN.

"HOW does Ontario compare with Spy in your orchard?" we inquired of Mr. Pitman.

"Oh, it is more satisfactory in my opinion. When you get it, the Spy is just as good or better, but you could afford to grow and chop out an orchard of Ontario by the time the Spy begins to bear."

"How early have you had fruit from your Ontario trees?"

"Why, some of them have begun bearing at two years of age! I like the Ontario. It is a smooth, clean apple, and packs well. It is an excellent shipper, and is less subject to codling moth than many other apples."

"Well," said Mr. Scarff, "I believe Mr. Pitman's opinion of the value of the Ontario is about correct. The first tree planted about here was the one sent me by the Ontario Fruit Growers' Association, and so, indirectly, I have been instrumental in introducing it to the growers about Woodstock, and I do not regret it."

"The Pewaukee," said Mr. Pitman, "was planted in my orchard before I bought it, and I have no liking for it at all. It is ill-shaped, poorly colored, and drops very early. I cannot see why it has ever been recommended to us growers as a valuable variety."

APPLE PRICES

MR. NANSKERVILLE has a few acres of fruit just inside the town; he complains of spots on his Greenings which unfit them for first grade. His Spys, however,

FIG. 2457.

were very fine. He had already sold his apples at from 75c. to $1.00 for the fruit, right in the orchard.

ROSES AND CARNATIONS

ARE grown quite extensively by Doyle Brothers, who have eleven acres in truck gardening, and some 10,000 feet of glass, chiefly for the production of roses and carnations. The business seems to grow very rapidly, and this fall they have set under glass about 5,500 carnation plants, and about 1,500 roses. Of the latter the more prominent varieties grown by them are Birde, Bridesmaid, Souvenir de Wooten, and Lady Dorothea.

BETTER THAN X'S FOR GRADE WORKS

ARE certain definite terms. One, two and three X's are well enough, but when you want to show the higher grades and put on six or seven X's, it becomes confusing to both buyer and seller.

At the very outset, two or three years ago, we used the terms No. 1, A No. 1, and extra for three sizes of No. 1 fruit ; and it is not easy to improve upon these marks. Here is the whole table of grade marks as we have used them in the export of boxed apples, and a shipper may choose any column of marks, but we commend the third as the simplest. Beginning with the poorest grade, we have

FIG. 2458 WOODSTOCK SURROUNDINGS.

For No. 2 apples,

X	or	No. 3
XX	or	No. 2

For No. 1 apples,

2¼ inches	XXX	Small or dessert
2½ "	XXX	No. 1
2¾ "	X XXX	A No. 1
3 "	XX XXX	Extra
over 3 in.	XXX XXX	Extra large

UNIFORMITY IN GRADE MARKS MOST DESIRABLE

NOW these marks are most suitable and convenient. Perhaps they seem too many to those who have bulked everything together, big or little. But those days are passed, and we find that uniformity of size in a package pays in dollars and cents. Now if all who try to put up graded fruit would adopt these marks and grades, we would soon find the confidence of the British buyer growing, and our goods in greater demand.

AN INSPECTOR'S OPINION ON GRADE MARKS

MR. A. McNeill, one of the Inspectors under the Fruit Marks Act, looked over this copy before it went to our printer. "You are on the right track," said he. "Those X's are confusing, and your 3rd column is much better. Those terms describe exactly the grade, and are fully in accord with the Fruit Marks Act.

"Ordinarily speaking, most shippers will simply ship No. 1 and No. 2 apples; but of course you who put up fancy grades in boxes, and use a grade to reach uniformity in size, will need the higher grades.

"The speculators, who buy largely, will not grade as you do. How can a man, who handles 40 or 50,000 bbls. of apples in a single season, stop to do it."

"Well, the whole question, in a nutshell, is, would it pay? If 20,000 bbls. so graded would give as much profit as 40,000 carelessly graded, then it would pay."

PRUNING THE GRAPE VINE

THIS work is usually left for the month of March, a cold, chilly month, when the pruner suffers most severely from exposure at such quiet kind of work. In northern sections where the wood is often killed back in winter, it may be best to wait until the cold weather is past before pruning, but in the greater part of Ontario it is better to begin pruning in November. The vines should be pruned and laid down, so that the snow will protect them from the severe cold. Then the brush should be dragged out to the end of the rows with the harrow, and burned, thus destroying many fungus germs.

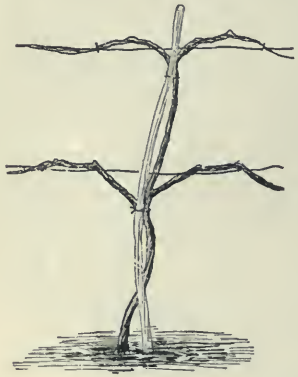

FIG. 2459.
KNIFFEN SYSTEM.

Most grape growers prune altogether too little. Such thrifty growers as Concord and Niagara produce altogether too much wood, and if all is allowed to remain, not only will there be much fruit, but much of it will be poor in quality, and the branches ill-shaped; while fifty buds will give as much fruit as the vine can mature to perfection. A fairly good general rule with Concords is to reduce the canes to five in number, and cut these back to nine or ten buds each. The Delaware should be cut back more severely still, while the Rogers grapes need not to be cut back so closely.

FIG. 2461.

FIG. 2462.
THE FULLER SYSTEM.

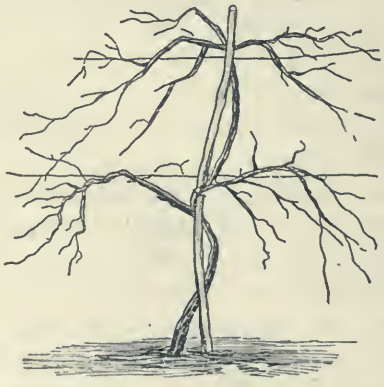

FIG. 2460.
KNIFFEN SYSTEM

THE KNIFFEN SYSTEM OF GRAPE PRUNING

IN those mild sections, where it is not necessary to give winter protection, the the Kniffen system is advisable because of its simplicity. As shown in our engraving the vine is cut back to four arms, thus requiring only two wires, and the young growth hangs down, and does not need any summer tying up. Very often these arms

FIG. 2463.
THE FULLER SYSTEM.

are renewed by replacing with a strong young branch from a bud near their base. This is the quickest and least expensive method, but the objection to it is that in time a vineyard so pruned is unsightly with old wood which cannot be laid down for winter protection.

THE FULLER SYSTEM

THIS is a modification of the old country Renewal method, which called for the cutting back each year of every alternate upright to within two or three buds of the main arms; while this method requires the cutting back every upright annually. The old method is best for such varieties as Rogers, which are not over vigorous, but the Renewal is better adapted to our more vigorous growers.

The method is well explained by the accompanying engravings, showing a vine allowed to produce one upright branch the first year, Fig. 2461, two uprights the second year, Fig. 2462, and the third year these two trained horizontally on the bottom wire, to form permanent arms from which young uprights are grown each summer. Every fall, these should be cut back to within one or two buds of the main arm, in the case of Worden, Concord or Niagara, and there will still be enough wood left to produce as much fruit as the vine ought to bear.

SUMMER PRUNING THE GRAPE

IS too little observed among Canadian fruit growers. The rush of work is usually so great, and the workmen employed so few, that the vines are too often allowed to have their own way, and grow in the most rampant fashion, giving little opportunity for the fruit to reach it best development, and wasting the energy of the vine in producing and maturing a mass of useless wood. The surplus shoots should be rubbed off with the thumb and finger as soon as they appear, and the canes should be pinched back four or five joints beyond the last bunch of grapes, so that the strength of the vine may be forced into the fruit.

FRUIT TALK AT ST. CATHARINES FAIR

THE smaller fairs seem to be taking a new lease of life, through the exertions of Secretary Creelman and the local officials. At St. Catharines on the 17th we found a magnificent display of fruit, and the fruit men gathered at the door of the main building to listen to In-

spector McNeill giving a demonstration of grading and packing apples. After showing what apples should grade No. 1 and what No. 2, Mr. McNeill, with Mr. Robert Thompson's assistance, packed a barrel of apples for export; he then showed several box packages and advised their use for fancy fruit. In 1901, he said, California shipped 200,000 boxes of apples, and even British Columbia were larger shippers of boxed apples than Ontario. The California people use a smaller box than we are using in Ontario; ours when filled weighs about 55 pounds and theirs only about 40 pounds. It measures outside 20 x 12½ x 9¾, and inside 18½ x 11¾ x 8½. It takes about four of them to a barrel. "We have too long been trying experiments in introducing new packages. Why not just accept California boxes, that are already known in the British market," said Mr. McNeill.

Mr. Geo. E. Fisher objected, because the Ontario bushel box is a better box and stronger. Besides it has a great advantage when calculating cold storage space, because being practically 1 x 1 x 2 feet, it measures just about two cubic feet; while the pear half case is the same superficies and measures only one cubic foot.

"I think," said Mr. A. H. Pettit, who was showing his new apple grader, that the California box is too weak, the sides are too thin, and for long shipments are not to be compared to our Ontario apple box."

"I am a little disappointed in my first returns for winter apples in boxes," said the writer, "for, while barrels of Kings are reported selling at from $5.00 to $6.00 a barrel in Great Britain, my boxes are only selling at from $1.00 to $1.50, and there are scarcely three boxes to a barrel!"

MIGHT EXPORT PEACHES

DEPUTY MINISTER JAMES, of the Ontario Agricultural Department, is of the opinion that with proper export facilities a big trade in peaches could be built up between Canada and Great Britain, such as now exists between the Old Country and the United States. He did not think that speed was such a factor as proper cold storage accommodation. In many districts of Canada, such as the Niagara and Essex fruit belts, magnificent peaches were grown which would find a ready sale in England at good prices if they could be got there in really good condition. Mr. James remarked that the United States peach export trade had been to a large extent fostered and built up by Government efforts.

As a sample of the prices which obtain for this luscious fruit in England it may be mentioned that a citizen of the Republic recently remarked to The Mail and Empire that he got the shock of his life at a London (England) restaurant. After lunch, he casually ordered half a dozen peaches, forgetting how far from Peachland he was. The shock came when he had to put up half a crown (60 cents) each for them.

MR. R. L. HUGGARD AT LINDSAY FAIR

IT would be a good thing if we fruit growers could oftener exchange visits at fairs, but our fruit harvest makes it very difficult. Mr. R. L. Huggard writes the Sun of the fruit at the Lindsay Fair as follows:

In fruit, the exhibit was exceedingly fine, notwithstanding the cold, rainy spring. Lindsay vicinity must be a splendid fruit section, as many sorts, such as Kings, Greenings and some others, especially Fameuse and Wealthy, were superior to the same varieties shown at the Industrial. The same applies to pears—Bartletts, Clapps' Favorite, and Flemish Beauty, with several other kinds equally good. Quite an exhibit was also made in plums, both of native and foreign varieties. There was, too, a plate of beautiful Fitzgerald peaches. I afterwards saw some of the fruit on the trees in

the handsome and well cultivated grounds of Mr. Robson, who has one of of the neatest appointed gardens in town, just alongside that of Thomas Beal, who is truly said to be the father of horticulture not only in the town, but in the surrounding districts.

Immediately south of the Exhibition stands the beautiful new hospital, which was a gift of Mr. Ross of Montreal, a former resident of Lindsay. The building and the location are simply magnificent, and would well repay a visit. The beautiful edifice is to be officially opened in a few days.

PEAR CANKER.

THIS is a disease which has been hitherto confounded with pear blight, but recent investigations prove that it is quite distinct, and is caused by a well-known fungus, Sphaeropsis Malorum.

"The disease shows itself," says the Delaware Bulletin 57, "on the main body or on the larger limbs, as, round to elongated, sunken areas, which are usually dark or black in color. These sunken areas are due to the death and dying-out of the inner bark. The bark adheres firmly to the underlying wood, but commonly in the latter stage of the malady, becomes cracked.

"The dead area is usually bounded by a crack, making a short line of demarcation with healthy wood. The dead bark may also show a number of cross fissures. These areas are self-limited, or at least extend slowly, but a number of adjacent areas may coalesce, so as to girdle the limb or main trunk, and thus kill the tree. Formerly this disease has been confounded with the ordinary pear blight, or fire-blight previously mentioned, but the two troubles are entirely distinct, both as to their character and cause. Fire-blight is more diffusely spread; in other words, it is a general blackening of the limbs, and does not appear in circumscribed areas on a limb or trunk. The tissues also do not shrink or show cracking of the bark, which is so characteristic of this disease."

Nature attempts to form new healthy bark underneath, and if some exterior application were effective in destroying the old fungus, the disease might be cured, and for this the following formula is recommended: formaldehide, 1 pint; glycerin, 2 pints; water, 17 pints.

PEAR BLIGHT.

THE cause and spread of this evil is no longer so mysterious as in former days. The Bulletin above quoted gives the following important particulars: The disease is caused by a minute germ or bacillus. This germ only needs to come in contact with a blossom or be introduced into the tissues of a leaf, young shoot or bud for the disease to manifest itself. From that point it extends slowly downwardly and inwardly.

One of the great sources of infection is observed in the spring, when blighted twigs are often seen to exude a milky looking substance. This latter is the pear blight virus in an almost pure state. If examined under the microscope it is found swarming with rod-shaped organisms or bacilli. From this, too, the organism can be isolated and grown upon artificial media, and from these pure cultures, blossoms, buds, twigs and leaves can be innoculated, and the trouble reproduced.

To show the relation of the milky virus exuding in the spring from blighted trees to spread of disease, a quantity of the latter was collected on April 25th, 1902, just at the time that the trees were coming into bloom. This was diluted with sterile water to make a turbid fluid, which the microscope showed was swarming with pear blight germs. By means of a camel-hair brush dipped in the diluted virus, a number of blossoms were touched in their centres and infested with germs. The blossoms so innoculated were then enclosed in bags.

Two weeks later all of the twigs which bore innoculated blossoms were blighted for a distance of four to eight inches, and bore black and shrivelled leaves.

One shoot whose blossoms were innoculated six weeks previously was blighted for the entire length of the shoot, a distance of fourteen inches, and was beginning to extend downward from these points.

It has been shown that bees and other insects are largely instrumental in disseminating the virus from one blossom to another; and while it would be impossible and unwise to banish the bees, even if we could, it is possible to remove much of the virus which they are so instrumental in carrying.

This will consist in a thorough inspection of the orchard in the spring before the blossoms open, and the cutting out and burning of all blighted limbs, branches and spurs, This will prevent, in a large measure, the wholesale infection of the blossoms, either on terminal growths or spurs, at which time nearly all the blight gets its start in the tree.

Again, if one will inspect a pear orchard any time during the months of May or June, one will observe a greater or less number of blighted terminal shoots and spurs. These represent blossom and perhaps bud infection as just noted. If these blighted parts be allowed to remain, the disease will extend and serious consequences will follow. If the terminal blighted shoots are cut out, the progress of the disease from these points can be stopped, provided care is taken to cut well below the blight and through the healthy wood.

When the spurs are affected, it is seen as clusters of dead leaves. These being short, it does not take long for the blight to extend from them down to the larger limbs. If not cut off on the first appearance of blight in them, the disease would have extended into the branch, where their excision would be useless.

Hence, soon after blossoming, the tree should be watched carefully, and every evidence of blight removed as fast as it makes its appearance. Delay, especially as regards the excision of blighted spurs, is fatal. That is, it will necessitate the later removal of a large quantity of wood, even to limbs, which might otherwise be spared.

Most farmers practice pruning for blight, but they commonly do it whenever convenient, rather than at the right time, or perhaps not until the tree is badly involved.

Following the two spring prunings, the first before the buds are open, and the second during a period of a month following them, there should be a third inspection and pruning in the fall before the leaves drop, cutting out at this time any evidence of blight which may have escaped the previous operation.

THE GEORGIAN BAY APPLE HARVEST

MUCH FINE NO. 1 FRUIT—PRICES LOW.

THE apple harvest in the celebrated Georgian Bay district, says our friendly contemporary, the Sun, is now fairly under way.

The apple crop in the eastern end of that district is turning out better both in quality and quantity than expected. The color of the fruit is superb.

"Never before," said W. T. Pattullo, one of the large growers near Creemore, "were my Ben Davis as free from blemish, as well formed, and as highly colored as this year."

But it is not the Ben Davis alone that is well colored. The Ganos and Kings are also rich in coloring, Spys alone showing a little weak in this particular.

There is to be seen in the Pattullo orchard an illustration of how quickly results can be obtained from grafting. There are now perfect tops in Kings, Ontarios, and Spys, on trees which were worked over five years ago. Some of these new Spy tops will give a barrel of fruit this year, while Ontarios will do even better. Mr. Pattullo has a perfect

union in Spys on Astrachans, but he agrees with all other practical fruit-growers in saying that the Tallman Sweet affords the best possible stock to graft upon.

The importance of the apple-growing industry about Creemore is shown by the fact that a firm of dealers have this year put up a large apple storehouse in Creemore for the receiving of the fruit. The same firm have another storehouse in Winnipeg, and their expectation is to find in the West the principal outlet for the apples produced in this district.

Prices about Creemore, considering the excellent quality of the fruit, are running very low—75c. for fall, and $1 for winter fruit, on the tree. The lion's share of the profit in this year's apple crop, in that section at all events, will go to the dealers.

"I have," said W. B. Sanders, President of the Georgian Bay Fruit-Growers' Association, in speaking of the keeping of apples for one's own use, "adopted this plan of keeping mine: I store in a cool outhouse until after several degrees of frost, and then lay singly on shelves in the cellar. I find fruit will keep in that way in perfect condition until well on in spring."

"And I," said D. Somerville, of Sunnidale, "have never had better success than with pitting. In pitting, I dig in a piece of sod ground to a depth of three feet or so, and put the apples in the opening. Above the apples, but about six inches below the surface, I put in a board covering so as to prevent the earth covering from pressing on the fruit. Then I cover with enough earth to exclude air and frost. I have had Spy, Ontario, and Russet apples come out of the pits so made in perfect condition after spring seeding was over. In fact, the fruit was as fresh as if just picked from the tree."

This year the keeping quality of apples, owing to favorable climatic conditions, should be particularly good.

THE McCABE ORCHARD, NEAR BRONTE.

ALTHOUGH the past summer was an exceedingly wet one, says the Sun, Mr. McCabe was able to have his trees thoroughly sprayed. The effect is clearly shown on almost every tree in the orchard. Spotting is as rare in his fruit as it is common in a great many other cases. Another indication of the healthfulness of the trees is found in the fact that four Baldwin grafts put on a Canada Red three years ago are bearing eighty apples this season. In fact, one Baldwin graft is bearing the first year after putting on. Mr. McCabe has followed the same plan as C. E. Secord, of the Niagara district, in planting Kieffer pears along the fence lines. Some of these Kieffers have several pears on this year, although they were not set out until 1901. The fruit part of the farm is not confined solely to apples. There are 1,800 plum trees, and the berry bushes cover eight acres.

MAY HAVE 3,000 BARRELS OF APPLES.

The bulk of the apple trees are Greenings and Baldwins. A short time ago Mr. McCabe thought he would do well if he secured 1,000 barrels of merchantable fruit. When he made this estimate the manager of the farm expressed the belief that the yield would come nearer 2,000 barrels. Now, when picking is actually under way, it will not be surprising if the total yield reaches 3,000 barrels. The quality of the fruit produced is indicated by the fact that Mr. McCabe has already had an offer of $1.35 per barrel. This he has declined, however, as he is confident he can do very much better.

AN APPLE WAREHOUSE.

In order to make the most of his crop, he has approaching completion an apple warehouse 80 by 30 feet. In building this warehouse a trench for the walls was dug below the frost line. This trench was filled with field and lake stone to a little above the

level of the ground, and then a cement wall was carried six inches above this.

The floor of the whole structure was filled in with stone and finished with Portland cement. This floor slopes towards a driveway which runs the entire length of the building. In this way the work of cleaning is facilitated. On either side of the driveway are the apple bins, each bin holding three tiers of apples about three feet in thickness. The bottom floors of these bins are formed by laying joists (on edge) four to six inches above the level of the floor of the building. These joists are about an inch apart. In this way air circulates under the bins, up between the joists, and through the apples, which are piled above. The floors of the two upper tiers are formed in the same way as the floors of the bottom tier. In this way each bin contains, as stated, three tiers of apples, one above the other, with an open space between each, and the air circulating through the whole. In constructing the walls of the building Novelty siding is nailed to the studding, and tar paper placed over the siding. Then there is an air chamber, and next this air chamber is a lining of matched lumber covered with tar paper. Then there is a second air chamber of four inches, with tar paper and tongued and grooved lumber. Above the warehouse is a storeroom in which there is room for the storing of sixty tons of hay. This affords room for the storing of surplus hay, and at the same time prevents frost from penetrating from above.

WILL NEARLY PAY FOR ITSELF IN A YEAR.

"This building," said Mr. McCabe, "is costing $1,200. It will afford room for storing 1,000 barrels of apples, and I expect that the extra price which I shall obtain later on for the apples which I shall be able to hold there will pay for the entire cost of the building in the first season. I am justified in this opinion by the fact that the best offer I have received for my apples so far is $1.35, while a dealer who has secured a considerable quantity of winter apples refused to sell out to me at $2 per barrel. This dealer evidently expects that his fruit will be worth a good deal more than $2 a little later on, and I believe it will, too."

While Mr. McCabe depends largely upon his cattle for the fertilizing of his orchard, he does not overlook the value of clover. In fact, there are few farms on which clover is so largely grown as on his place. Clover is to be found overywhere, and the invariable practice is to turn it down the second season. The quality of the grass on the place is shown by the fact that some steers which on the 28th of June averaged 753 pounds, averaged 916 pounds on the 21st of September.

FIG. 2464. AN ENGLISH MORELLO CHERRY TREE AT MCKINNON'S.

ENGLISH MORELLO CHERRY ON CLAY

THE best orchard of English Morello cherry trees we have seen in Ontario is owned by Mr. D. J. McKinnon, of Grimsby. The trees are five years planted on clay loam, well drained and well cultivated, and cut back to within two feet of the ground, so that the heads are formed very low and the fruit can all be picked while standing on the ground. The trees were bending down with an enormous load of beautiful dark red fruit on August 2nd, when we took the accompanying photograph, and it was estimated that they would yield an average of three baskets to a tree. "They pay," said Mr. McKinnon, "better than any trees on the place. Of course they have been well fertilized, and this may in part explain their great productiveness. I put a car load of wood ashes on that two acres of cherry trees last year, and now I am reaping the returns."

We have the same variety of cherry at "Maplehurst" on sandy loam, and although the trees were nearly as full of fruit, there was much greater tendency to rot, and all had to be gathered before the above-mentioned date. It is unfortunate that this cherry should be so often sold as Wragg, not a euphonious name, surely; this name was given it by a western nurseryman, who claimed that he had a variety quite distinct from English Morello, but nobody else seems able to see any difference.

FAIRLY GOOD REPORTS OF FRUIT EXPORTED TO GLASGOW.

WHEN the fruit growers of Ontario have learned to produce only fruit of the best quality, and never to allow inferior samples upon a tree to reach maturity, they will have learned the secret of success in fruit growing. Then we can ship with confidence to any market and expect reasonable results.

Every week since August 1st, when Astrachans began to ripen, we have kept up steady and successive shipments of apples and pears, with varying success, but on the whole, with encouraging results.

With the exception of one lot to Manchester and one to Liverpool, all these have gone to Glasgow, and a recent mail has brought us the following report by John Brown, Inspector at Glasgow, which may be of interest:

EXTRACT.

(Marina Shipment).

The 953 C's shipped by L. Woolverton consisted of Wilson C's of pears and apples, ½ C's pears, 40 lb. boxes apples, 2 C's plums, 3 large Wilson C's peaches. The pears were packed in the ½ C's in wood shavings with no paper on them; the variety was principally Bartlett. These showed up very well, although some were very ripe. The pears in the Wilson C's showed up well also, and the Duchess apples in Wilson C's were the best Duchess I have seen this season. The peaches were very wasty and only about a third of each case was fit for use. These were put up in special cases with no ventilation whatever, which I think had something to do with the condition they arrived in. They are, in any case, a dangerous fruit to ship. The two half cases Washington Plums were useless. The following are the prices:

Bartlett Pears in Wilson C's,	6/3	8/–
Duchess Apples do	5/–	6/–
Bartless Pears, ½ C's.....	5/–	5/9
Apples. 40 lb. boxes	6/3	6/6

I have seen two of the largest buyers of the Bartlett pears, both of whom report: the pears they got went sleepy, and after 3 or 4 days were quite useless.

(Lakonia Shipment).

L. WOOLVERTON, PEARS AND APPLES.—The pears were packed in half cases in Excelsior packing, without being packed separately in paper. This packing was (for pears) rather coarse; something of a finer and softer nature would, I think, be more suitable and less likely to bruise the fruit. I also advocate the wrapping of each pear separately in paper, the same as the Californian pears, using the same kind of paper. Some of the pears were packed in Wilson cases. There was no paper on these either, with the result that a good many were bruised. The half case is going to be the most popular package here, as it relatively contains more fruit and is less expensive than the Wilson case. The latter would only pay with fruit of exceptional quality. The apples were packed in special cases holding about 40 lbs. of fruit. They were in layers with a great deal of Excelsior packing between each layer. This, I think, is quite unnecessary, a layer of Excelsior being sufficient, as buyers naturally prefer a box full of apples rather than two-thirds and one-third packing. Woolverton also sent a sample Wilson case of peaches and a sample case tomatoes. The former showed up well, each peach being wrapped up separately in paper and mostly in good order; the latter were a failure, the

tomatoes being soft and useless. The following are prices realized:

Bartlett Pears, ½ C's, 3/9 7/8. Some ripe, others extra good.

Louise Bonne Pears, ½ C's, 2/6 4/6. Green and good.

Flemish Beauty, ½ C's, 3/ 3/6. Green and hard.

Duchess, ½ C's, 4/3. Very good.

Bartletts, Wilson C's, 3/6 5/3. Wasty and irregular.

Apples, Wilson's C's, 3/9 7/3. Kings made highest price.

Peaches, Wilson C's, 6/3.

Tomatoes, Wilson C's, 2/ 2/3.

SUMMER TREATMENT OF SAN JOSE SCALE

ADVICE BY

MR. G. E. FISHER,

PROVINCIAL INSPECTOR.

THE cuts below clearly represent the importance of treating in summer trees which are badly infested with the San Jose Scale.

During the last week in August 1901, the tree at the left (1) was so affected that several limbs were already dead, and that at the right (2) not nearly so badly but had a good sprinkling of scale. At this date

FIG. 2465. BADLY INFESTED TREE, CURED BY TREATMENT.

FIG. 2466. SLIGHTLY INFESTED TREE, UNTREATED.

the dead branches were removed and the badly infested tree treated with twenty per cent. of crude petroleum and water, and the other tree left unsprayed.

The cuts show how the trees leafed out this spring. The treated tree blossomed and bore fruit this year, while the scale increased on the other during last fall and sucked the life out of two thirds of the top.

HINTS TO APPLE SHIPPERS

EARLY APPLES—CASES WITH FILLERS—DUCHESS AND ASTRACHAN APPLES—TOP PRICES FOR GRAVENSTEINS—PEACHES FOR EXPORT—HOW TO PACK—STENCILS FOR NAMES OF VARIETIES — DUCHESS APPLES, TEN SHILLINGS !

A LETTER FROM

A. McD. ALLAN,

WOLVERHAMPTON, ENGLAND.

WE are able now to speak with confidence upon the desirability of sending early kinds of our Canadian apples into British markets. We have had two shipments already this season and, generally speaking, results were satisfactory when all the conditions are considered.

As a rule these fruits are not known here, and the ordinary purchaser or the private citizen will ask for something known such as Baldwin, Spy, Russet, etc. But a taste of ours is enough to convince the worst sceptic of their superiority over home grown varieties or others. There is a mellowness, flavor and juice in ours that cannot be found in others in these markets, and by persistence, a free use of cold storage and careful selection and packing we are sure of a high and permanent place in British markets. While the Wilson case with drawers and fillers is much admired, I find it easier to sell the layer cases with apples in layers and divided by cardboard between layers, as these contain a larger average of fruit in proportion to the size of case, while the others are disappointing to buyers when the fruit is removed and weighed.

Of early kinds Oldenburg takes first place easily and buyers ask for more. Transparent is popular also and will always be in demand owing to its flavor and fine appearance

Astrachan takes well when in good color and not over large; indeed the good medium sized apple finds more ready sale than the large, besides the Astrachan, when large, seems to lose flavor quickly, become mealy and crack.

Strawberry arrived well and is appreciated.

Pipka must have most careful handling and storage as it ripens quickly and gets off flavor and cracks in a few days. It should be picked when perfectly hard. Switzer carries fairly well and sells like several of its class when there are no Oldenburg on hand.

Titovka is much the same type as Pipka and must have "deep consideration" in picking and storage. It is a mistake to ship half-grown Alexander, as it presents the appearance of the boy who laments that he cannot be a man at once, and a full grown Alexander is too large to make money for the shipper as it has not the points of excellence to warrant a fancy price. Maiden's Blush will stay mostly on account of fine appearance and regularity of size and form.

Fameuse should not be sent over so early as it lacks size and color, but later on will be in strong demand at fancy prices for a well put up sample.

St. Lawrence is without doubt wanted here and will be enquired for by all who have had the good fortune to test its fruity flavor. Besides these mentioned we have had a few

others such as King, which is always popular, and Cabashea also. Gravenstein needs no mention for popularity and when in good color makes the top price. We had a case of apples named Brockville Beauty, highly colored but very small. It may be some of the children of that variety, but my recollection is of a large fruit more of the Fallawater size and form.

Peaches did not arrive in order, but why? I observed the only few specimens discernable were Garfields, which were loosely packed in tissue only, and one kind not named from Mr. Woolverton, where tissue was only used in a few specimens. In the whole there was one perfect specimen and that was not wrapped at all. Evidently the double wrapping is not suitable for peaches, nor do I think desirable in any fruit. Whatever the packing may be it should allow a perfect circulation of air around the fruit itself. Samples in the Wilson case fillers were good, but unless each filled its compartment closely, the moving tends to bruise any soft fruit.

The first shipment came in cold storage and was perfect, excepting peaches and soft pears. The second lot was not in cold storage and all peaches, pears and plums were rotten, and the softer kinds of apples wasty and unfit for market.

My own judgment is that a compartment, supplied with cool dry air by a fan, would be more serviceable for fruits than the cold storage as it is often supplied. Possibly if the matter were followed out we would find that the cold chamber is not held at an even temperature during the voyage, or it may be held at too low a temperature. This matter requires looking carefully after. I believe 43 to 45 would be cool enough for soft fruits and certainly if the temperature goes under 40 evil will ensue.

But to return to the staple fruit, it pays better to ship an apple that combines eating and cooking uses than simply one, medium size, even samples of good form and generally attractive. To get a high price both the eye and palate must be tickled.

It is better not to try and impress the markets with the large number of varieties we have by sending shipments mixed with many kinds. More money is made by a few choice kinds and consumers are not mystified as to what to buy. It is a mistake to pack with fresh excelsior as it heats when not in cold storage, and generally too much of it is used. If properly seasoned or kiln dried it is one of the best materials we have for the purpose, and when apples are wrapped solidly in cases a very slight scattering of excelsior between layers is useful. Even when it is used without wrapping samples, much less will suffice than I observe shippers using. The Russians use straw when packing apples for winter use. Long single stalks are placed under each layer above and along the sides all through the package so that samples are separated by a few straws on all sides, and some claim this system is perfect although tedious. For those who have the time and patience it may be worth trying.

It would be a great convenience if shippers would use stencils to mark the name of kind and shipper's name on each package, as labels are so easily torn off in transit.

We are not receiving fruit enough to go into the markets and make a perfect test of what can be done in prices, as much of it is used in keeping the exhibition tables attractive. But the small surplus we get is readily sold at 8 shillings for the large cases and 5 shillings to 6 shillings for the small where the fruit is in good order. I did sell some fine Oldenburgs at 10 shillings and the dealers in selling by the pound charged 8 pence. Consumers readily, however, pay from 4 pence to 6 pence per pound.

Freights are too high and pressure should be brought to get a much better scale of rates from forwarding companies. I believe fruit pays the highest average freight of any

of the products of the farm. Why is this? I can only think it is because shippers are generally good natured enough to pay it. We are long suffering or have been so, let us kick.

I met a gentleman a few days ago who asked me if we had the new tin can for fruits and vegetables that needs no solder. Perhaps our canners know all about it, but in case it may be of use to them full information can be obtained from "The Self Opening Tin Box Company, York Road, King's Cross, London," who use the Muncham patent closing machine.

APPLES IN THE GEORGIAN BAY DISTRICT

BY

T. H. RACE, MITCHELL

IT was my privilege this fall to visit some of the districts bordering on the Georgian Bay and note the apples and other fruits out there, in comparison with other sections lying further south. It was the second time that I had acted as judge of the fruit exhibits at the Orillia fall fair, and on neither occasion were the expectations of nine years ago, when we held our annual meeting in that pretty town, borne out.

It will be remembered by many of those who met at Orillia that fall nine years ago what a splendid showing of apples there were. That seemed to be a favoured season with them, and we were all most favorably impressed with very superior quality of the apples produced and shown there. From later visits I have satisfied myself that such varieties as the Baldwin, the Spy, King, Greening and some of the pippins will not do well in the Orillia district. The Ben Davis will do fairly well on the ridges round about the lakes, but I doubt its being generally successful. The Duchess, Wealthy and Alexander are still promising varieties there ; but the apple that I found especially at home in that district was the North Star. In no other section where I came across the North Star did it appear to thrive as well and attain as high a quality and good size as about Orillia.

In my opinion the North Star is very little inferior in quality to the Gravenstein. Mr. D. Cantelon, of Clinton, the Huron fruit king, who grows it largely, thinks it superior in quality to the Gravenstein. And it is free from spot, a better grower, a longer keeper and uniformly larger in size than that variety. All things considered I believe the North Star a coming apple for the late fall or early winter market, and especially valuable for the Orillia district.

But I found another apple at Orillia which I consider worthy of special mention. It is evidently a seedling from the Duchess, and resembles that variety in all its essential features except in its season. It is a Duchess apple moved on about six weeks in its season. Our director, (Mr. C. L. Stephens), for that district will have some specimens of it at the Walkerton meeting. If the Duchess ever becomes, as it promises to, a marketable apple up through New Ontario, and as far west as Winnipeg, this seedling will be a valuable addition to prolong that market to well nigh early winter.

Still another good seedling I found at Orillia grown by our director Mr. Stephens

which might be an offspring of the old Primate, but later in season than that old variety. It does not however promise to fill a place in the market like the other spoken of above.

Coming on to Collingwood I found a very fine exhibit of fruit there. Whatever the climatic differences between that section bordering on the Georgian Bay and Orillia, a few miles inland, the differences in the fruit is very marked. At Collingwood I found the Spy, Baldwin, King, Greening and all the standard varieties quite up to the mark. Ben Davis, Snow, Wealthy, and Blenheim Pippin were equally good; but Alexander and North Star were not up to the Orillia standard. Here for the first time I found a special prize offered for the best barrel of winter apples, and several competitors entered, the varieties being mostly Spies, Kings and Baldwins. It was a good object lesson and might well be imitated by other fall fair managers. The only defect was that the public were excluded while the judging was going on. This is a mistake in connection with all fruit judging.

I will have something to say about the cedars and other native ornamental trees at Orillia next month.

A STUDY IN FRUIT BLOSSOMS

BY

PROF. H L. HUTT, B. S. A.,

ONTARIO AGRICULTURAL COLLEGE, GUELPH.

A TREE in full bloom is an interesting study, not only because of its beauty, but because of the promise it makes of bearing fruit. We can all enjoy its beauty; the fruit-grower appreciates the promise of fruit; but in the tree economy, the blossoming and bearing of fruit are only means to an end,—the ripening of seed for the perpetuation of the species is the ultimate aim of the tree in blossoming.

FIG. 2467. APPLE BUDS AND BLOSSOMS.

THE STRUCTURE OF A FLOWER

If we examine an apple blossom, or that of most any of our fruits, we will see that it is made up of a number of parts. These may be grouped into two sets: those on the outside are the floral envelopes, made up of the calyx and corolla; and those in the centre are the sexual, or reproductive organs, the stamens and pistils. Let us examine each of these parts separately.

The *calyx* is the outer whorl of the floral envelopes, and is usually of a green color. Its parts are called sepals, and when united by their edges, they form the calyx-tube. The free ends are called the lobes of the calyx. It is the remains of these that may be seen at the top of the fruit in the gooseberry, apple or pear.

The *corolla* is the showy colored part of

FIG. 2468. SEMI-DOUBLE BLOSSOMS OF CRAB APPLES, SHOWING PART OF THE STAMENS TRANSFORMED INTO PETALS.

the flower, and is situated within the calyx-tube. Its parts are called petals. The showy color of the petals helps to attract insects to the nectaries in the centre of the flower, and in this way indirectly helps to bring about fertilization.

The *stamens* are the male organs of the plant and are situated just within the circle of the corolla. Each stamen is made up of a thread-like filament, on top of which is the anther. The anthers contain the pollen, a yellow substance, which is discharged when the anther becomes mature, and being dry and powdery it is easily carried about by winds or insects.

The *pistil* is the female organ of the plant, and is situated in the centre of the flower. It is made up of three parts : the *ovary* at the base, which contains the ovules or rudimentary seeds ; the *style*, an elongated tube leading down to the ovary and the *stigma*, a roughened enlargement on the top of the style, which receives the pollen from the stamens. The pistil is one of the tenderest parts of the flower, and is often injured when late frosts occur in the spring. The injury from such frosts may not be seen at all upon the other parts of the flower, but the injured pistil turns black, and consequently does not develop fruit.

HOW DOUBLE FLOWERS ARE FORMED

In a perfect single flower, all of the parts above named are present ; and, upon examination, it will be found that there is a regular symmetry in the number of parts. In an apple blossom for instance, we will find five sepals, five petals, a five-celled ovary, and while there is more than five stamens, it will be found that there is usually some multiple of five. The double flowers, which we admire so much in roses and many other ornamental plants, are brought about by the conversion of the stamens into petals. In most cases, this doubling is only partial, that is, only a part of the stamens develop into petals ; but in some cases, not only the stamens, but pistils also are transformed. Flowers which are completely double cannot, of course, develop seed.

FIG 2469. PISTILLATE STRAWBERRY BLOSSOMS.

FIG. 2470. THE BISEXUAL STRAWBERRY BLOSSOMS.

SEXUAL DISTINCTIONS IN PLANTS

The parts of the flower essential to fruitfulness are the stamens and pistils, and while most of our fruit trees are hemaphrodite, that is, having the stamens and pistils present in the same flower, yet there are many exceptions to this rule, in other kinds of trees and plants. In the oak, hickory, chestnut, corn, pumpkin, ragweed, or begonia, two kinds of flowers may be found upon the same plant, the one having pistils only, the other stamens only. Such plants are said to be *Monœcious.*

In maples, pines, and willows, it will be found that the essential organs are more widely separated, for the stamen and pistil are not only on separate flowers, but on separate trees. Such trees a said to be *Diœcious.*

Many varieties of strawberries show a peculiarity in this respect which calls for a word of explanation. The strawberry as a rule, is hemaphrodite, or bi-sexual, that is, having stamens and pistils present in the same blossom ; but there are many varieties, such as, the Crescent, Haverland, and Warfield, in which the stamens are very rudimentary, or entirely lacking. Such varieties are called pistillate. To make them fruitful, they must of course be grown alongside of bi-sexual or perfect flowering varieties, whose stamens furnish the pollen for fertilization. To speak of the latter, however, as staminate varieties, as is often done is incorrect, for a staminate flower is one in which there are stamens and no pistil, which never occurs in any of the strawberries.

THE RIVERS PEACH

SIR,—I always find something of interest in the Canadian Horticulturist. I agree with what is said in the October issue in regard to Alexander, Hale and Triumph peaches, but I cannot quite agree with what is said about Rivers Early peach. Specimens of Rivers peach grown near our place this past season were as large as Elberta, were almost white, with red cheek, and did not cling severely to the stone. These peaches were delicious, being exceedingly juicy, and I said to myself, if the Rivers everywhere is as good as this, it is a marvellous peach. The grower of these Rivers peaches said that it was hardy in bud, bearing regularly every year, and he sold the fruit in the Rochester market at remarkably high prices, since it had no competitor. I have been told that this variety was too tender for long shipment, but this is no serious objection to many people who grow for nearby market. I am anxious to get information in regard to the Rivers peach, and how it succeeds in various parts of this country. CHAS. A. GREEN.

NOTE BY EDITOR—Unless overloaded, the Rivers Peach is all that is claimed for it by Mr. Green. Our chief objection to it is its tender flesh, making it a poor shipper, and it is little desired for canning.

CONTRASTS IN METHODS OF APPLE CULTURE

BY

W. T. MACOUN,

CENTRAL EXPERIMENTAL FARM, OTTAWA, CANADA.

DURING the early part of September the writer had the opportunity of visiting the Hamilton and Grimsby districts, and of inspecting some of the large apple orchards there, and almost immediately afterwards of travelling more than 350 miles east to Montreal and vicinity, and examining large orchards there also. The contrast in methods was very marked, yet as good fruit was seen at one place as at the other. In the West, clean culture, heavy pruning and thorough spraying resulted in good fruit. In the East there was good fruit where the orchard was sod, the trees lightly pruned, but thoroughly sprayed. Spraying with Bordeaux mixture is necessary everywhere, but methods of pruning and soil culture must be governed by climate. In the West the soil is cultivated principally to conserve moisture. In the East, especially in the Ottawa Valley, this is not usually necessary, as there is sufficient moisture to ensure a thrifty growth and well developed fruit. In the West, severe pruning invigorates the tree, the result being larger fruit. In the East, there is danger of sunscald from severe pruning, though light pruning is necessary.

In Eastern Ontario and the Province of Quebec protection for the roots in winter is, in the writer's opinion, necessary, and as a rule more important than conservation of moisture. A young, bearing orchard may be ruined by winter-killing if the roots are not protected by grass, sod or some cover crop. There is no better system of cultivation known for Western Ontario than clean culture in spring and early summer, followed by a cover crop for winter protection and for adding humus to the soil. It is doubtful, however, if this system should be recommended for all sections. The writer believes that after the young trees are established best results will be obtained, where the trees do not suffer from drought and where the soil is good, by keeping the orchard in grass or clover all the year round, and mulching the ground with the grass or clover, which should be cut several times during the season. The soil may be top-dressed with manure or other fertilizers as often as is found necessary to maintain its fertility. There is much more likely to be immature wood where the clean culture and cover crop system is adopted than where the trees are in sod, and well ripened wood is very essential in Eastern Ontario and the Province of Quebec.

In the American Agricultural and Horticultural periodicals there has been much discussion for a year or more over the splendid results obtained by Mr. Grant G. Hitchings, Onondaga, N. Y., in growing his apple trees in sod and mulching with the cut grass. The fine results obtained by this gentleman have fully justified the discussions on his methods, but it is unfortunate that more prominence has not been given to the special conditions of soil moisture which

are said to exist at his place, making apparently an unfair comparison with the general conditions in that part of New York State, which are such as require clean culture, to conserve moisture. Mr. Hitchings' results, however, prove that where there is abundant moisture, as in many parts of Eastern Ontario and Quebec, his method may be adopted with good success. At the Central Experimental Farm it has been found that growing clover in the orchards and mulching with it has resulted in a thrifty growth and better fruit, and the writer has seen many orchards in sod producing fine fruit. Every orchardist must, however, study his own conditions, especially those of moisture and soil.

A STATEMENT OF THE QUANTITY AND VALUE OF FRUIT IMPORTED AND ENTERED FOR CONSUMPTION DURING THE FISCAL YEAR ENDING JUNE 30, 1902.

DUTIABLE.			
Dried Apples	lbs.	78,717	$ 5,310
" Currants	"	7,294,816	298,278
" Dates	"	1,463,020	31,772
" Figs	"	3,618,073	87,959
" Prunes	"	5,299,799	181,006
" Raisins	"	11,644,657	551,876
" All other	"	1,810,185	132,138
Nuts, Almonds	"	1,062,039	118,377
" Brazils	"	78,050	6,202
" Pecans	"	583,936	35,973
" Walnuts	"	1,107,423	79,022
" All other	"	3,954,311	190,280
Green Apples	bbls.	21,425	85,252
" Blackberries and Gooseberries			
" Raspberries and Strawberries	lbs.	1,064,251	94,139
" Cherries	"	117,574	11,310
" Cranberries	bush.	26,839	52,487
" Currants	lbs.	238	15
" Grapes (includes Malagas)	"	1,207,901	69,951
" Oranges and Lemons, boxes of 2½ cubit feet		462,137	1,011,566
" Oranges and Lemons, ½ boxes		51,052	63,367
" Oranges and Lemons, cubit feet		240,884	143,966
" Oranges and Lemons, No.		9,115	115
" Oranges and Lemons, barrels		17,991	46,466
Green Peaches	lbs.	3,558,358	91,839
" Plums	bush.	32,200	39,057
" Quinces	"	271	357
" Other			60,468
Preserved, in air tight cans,	lbs.	1,605,053	87,904
Preserved, in spirits	gals.	360	1,105
TREES—			
Bananas	bunches	765,767	738,168
Pine Apples, No.		1,095,949	87,929
Guanas Mangos, Pomegranites and Shaddocks			6,698
Wild Strawberries, Blue and Raspberries			812
			$4,411,164
EXPORTED—			
Green Apples	brls.	516,215	1,566,808
Dried "	lbs.	1,685,460	102,203
Berries			84,010
" Canned			142,972
Other Fruit			26,311
			$1,922 304

I beg to send you these figures for Horticulturist. They are very instructive perhaps, and comparison with ten years ago would be interesting.

Ottawa. G. H. FAWCETT.

A WARNING TO FARMERS AGAINST TRAP LANTERNS

CATCH FRIENDS AS WELL AS ENEMIES

BY

W. H. COARD, LL. D.

DEPARTMENT OF AGRICULTURE, OTTAWA

TRAP-LANTERNS, as destroyers of insect pests, have been recently much discussed in the northern and western portions of Canada as well as in the United States, and by the most persistent and unscrupulous advertising a certain "moth catcher" has been forced into undue prominence, so that fruit growers and farmers have been induced to buy in spite of the protest of those who have thoroughly and scientifically tested such devices. So important has this matter become that the Entomological Division of Cornell University has issued the result of experiments carried out with trap-lanterns during three years, containing in substance the following points :

Many kinds of insects are most active at night and are then often attracted to any light, but there are hosts of insects that fly mostly in the daytime. Most of the grasshoppers, many of the true bugs (like the squash stink bug), all of the butterflies (like the very destructive cabbage butterfly), many of the moths (like the peach tree borer moth), many of the beetles (like the Colorado potato beetle), most of the flies (like the house fly), and many of the hymenoptera (like the saw flies), are day fliers or are not attracted to lights, and these include a large proportion of our common insect pests.

While a trap lantern or "moth catcher" may attract and kill ten or twenty thousand insects in a season, most of the household pests, most of the fruit growers' insect enemies, and nearly all the serious pests of the gardener or grower of general field crops will fail to be trapped. Only winged adult insects are caught, the more destructive nymphs and larvae are never taken. Usually moths will constitute about half of the insects caught in trap lanterns, and most of these are not pests, only ten per cent. of those that are injurious are females, and these have nearly all laid their eggs. Often as many friends as foes among the beetles will be taken. Nearly one-third of all the insects caught in three months in two "moth catchers," run in Canada, were beneficial, and nearly as many friends as foes were caught in the trap-lanterns. As one of these parasitic insects' friends is capable of killing several injurious insects, the prospect of capturing so many beneficial insects become a serious factor in considering the advisability of using trap-lanterns. It is not so much a question of how many insects as of what kind of insects will be captured.

Experience shows an orchardist or a grower of small fruits has no use for a trap-lantern or a "moth-catcher," because they will not catch enough of the more injurious fruit pests to pay one-tenth of the trouble and expense of running them. Tent-caterpillar moths are the only common fruit insects that are caught in economic numbers, and nine-tenths of these will be males. Codling-moths are not attracted by lights, and only rarely one accidently falls a victim. The highest record in the Cornell experi-

ments thus far has been eight codling-moths in fifteen nights. The wingless female canker worm moths will not crawl into "moth-catchers," and the lights do not attract the two kinds of apple-borer beetles, the peach-borer moth, plum curculio, or the saw-fly of the currant-worm or pear slug.

As trap-lanterns can have no effect upon fungous diseases, they can never take the place of the spray pump and Bordeaux mixture. Experience has shown that several trap-lanterns set very near every tree in an orchard will not noticeably reduce the crop of wormy apples, or diminish the number of hungry caterpillars feeding on the buds and leaves.

There are instances in which trap-lanterns may prove useful, such as where some light-loving insects becomes a pest in greenhouses, or in the case of some local pest whose period of flight is sharply defined and of short duration. But no one has yet conclusively demonstrated that any insect pest can not be much more effectively and cheaply combated in some other way than by the use of "moth-catchers" or trap-lanterns.

The outcome of all the experiments made everywhere renders it doubtful if these aids help enough in our insect warefare to pay for the trouble and expense of using them, while they certainly do not warrant anyone in recommending their use, or even passively permitting it without protest.

APPLE SCAB FUNGUS

IS ONE OF THE MOST DESTRUCTIVE PESTS THAT COMES INTO ORCHARDS

VERY few, except scientists, recognize that apple scab is one of the most destructive pests that comes into the orchard of the apple-grower. The codling moth is supposed to be far more destructive, but such is not the case. Great precautions are taken against the said moth, but little or none against the apple scab fungus. When a picker takes an apple from a limb and finds a scab on it, he gives it not another thought, for that is apparently only a blemish. He imagines that he sees on the apple all the result there is, and he considers it not worth investigating. In fact, this scab does most of its damage to the foliage, and what appears on the apples is merely its secondary work. By the work of this fungus the entire tree is weakened, and the apple crop is cut short year after year. In addition to the fruit being smaller than it should be, the apples fall early, as the tree is too much weakened to nourish them sufficiently to induce them to hang on. It seems that an apple hangs on just as long as it is receiving nourishment. When nourishment is cut off the apple automatically detaches itself and falls. Anything that causes a check to this supply of nourshiment leads to the fall of the apple. The apple scab fungus, by sapping the strength of the tree, brings about this result. Another indication of the presence of the fungus is the fall of the leaves before their natural time. This is brought about in the same way as is the fall of the apple. The nourishment ceases going to the leaves and the stem begins to detach itself from the tree. Thus long before the other trees have dropped their leaves the tree that is badly affected by the fungus named is bare.

When a tree is badly affected it takes more than one year to bring it back to a normal condition of fruitfulness. Thus, if a tree has the disease this year, the crop

next year is sure to be small, for the reason that fruit buds are formed more than a year ahead of the time of their fruitfulness. If the tree is scabby this year the buds will be poorly developed or not developed at all. No matter how good its condition next year, it will not, in a single season, develop buds and bear fruits on those buds. Spraying is the only remedy, and that must be continued for a number of years.—*Farmers' Review.*

THE FALLING OF GOOSEBERRIES

BY

R. CAMERON

NIAGARA FALLS SOUTH

WITH others I am pleased to note the willingness of Mr. S. Spillet to give and receive information on gooseberry culture; and therefore I will give my view of the subject. I attribute the falling to the drouth and heat, coupled with over luxuriant growth of suckers. If a bush produces from one hundred to one hundred and fifty suckers, as Mr. Spillet says they do, I think such cases most extraordinary and I would dig out and burn such bushes, and begin afresh. If the cuttings are made properly they should not produce suckers at all. All the buds, in that portion of the cutting which is supposed to go under ground, should be cut off and only three or four buds near the top should be left to form branches from which branchlets will grow, until the desired number is secured. All the rest should be cut off when pruning. It is not necessary to prune the bushes more than once a year, viz., about the middle of March. If the bushes are trimmed on the spur system, allowing the light and air to pass freely through the plants, the foliage will be healthier, will produce more substance and the plants will be more vigorous—two powerful factors in preventing mildew and the ravages of caterpillars. By this method the weight of fruit will not be less than in the way generally adopted, the berries will be much larger in size, and there will be no drop to the fruit before it is matured. Here I may say that if mildew does show, which seldom happens when the bushes are grown in this manner, especially if upon clay or clay loam, I would have some fresh slacked lime thrown over and through the bushes, whitening the soil under the plants; this will be found to prevent the ravages of the caterpillars as well as to prevent the mildew. I have grown the English varieties of the gooseberry in this way to five and one half inches in circumference. The English gooseberries will never be grown successfully in this country, particularly upon light soils, and those varieties that will give any satisfactory returns will be found to be the thick skinned ones, such as White Smith, Industry, Crown Bob, Warrington, etc. The clay soil bakes on the surface, and quickly dries down to the roots of the plants if not stirred frequently, and this dryness will cause the fruit to drop; but in such cases, if the surface of the soil under the bushes be covered with coal ashes or a similar material, it will keep the surface open and moist so that the heat and air will pass freely through the soil, a very essential factor for the well being of any plant, and particularly of the gooseberry, which must have its roots kept cool and moist.

The gooseberry is a gross feeder, and thrives best by being fed with a bountiful supply of barn-yard manure water; mulching the plants with ashes, as stated above, will permit the soil to receive the liquid manure freely and save stirring the soil, in after feeding or after rains, to prevent baking.

THE LITTLE GARDENERS OF HAMILTON

SPLENDID WORK BY THE SPECTATOR UNDER AUSPICES HAMILTON HORTICULTURAL AND CITY IMPROVEMENT SOCIETY—PRIZES GIVEN OCTOBER NINTH—GREAT ENTHUSIASM—THE CITY BEAUTIFIED.

THE flower garden competition inaugurated by the Spectator Printing Company and managed by the City Improvement and Horticultural societies, was brought to a most successful ending last night, when, in the presence of an immense audience gathered in the city hall council chamber, the awards were made, along with those in the Improvement society's window box competition. It was the most successful annual gathering ever held by the Improvement society, and throughout the proceedings were of a most pleasant character. The prize winners were numerous, and particularly in the case of the children who won Spectator awards the applause, as the little tots came forward to get their money, was most generous.

The Spectator competition for flower gardens was in two sections—one for children, in which the city was divided into four districts, and three cash prizes were given in each to girls and three to boys having the best gardens designed and cared for by themselves. Added to these were several merit awards of seeds and bulbs to those who did not succeed in winning any of the cash. The second division was an adult competition, in which four cash prizes were given for the best gardens* in the whole city. The total amount donated in this way was

FIG. 2471. A STREET CAR USED AS A SUMMER HOUSE, MAIN ST., HAMILTON.

NOTE.—Some photographs in illustration, too late for this number, will appear next month.—ED,

FIG. 2472. GARDEN OF R. S. ANDERSON, HAMILTON.

$125. The society's window box competition was also a cash prize affair, the total being $60, and the city being divided as in the Spectator's children's competition. The society also gave a special prize of $25 to the ward foreman for the best kept city ward.

R. T. Steele, president of the Improvement Society, was in the chair at last night's meeting, and with him on the platform were Mayor Hendrie, ex-Mayor Teetzel, Adam Brown, Rev. Canon Forneret and Newton D. Galbreaith, secretary of the society. The council chamber had been most beautifully decorated during the day by members of the society and their friends, and the large audience appreciated the effort that had been made to have all things in keeping for the occasion. In opening the meeting Mr. Steele made a brief address. He said:

It is only a short time ago since a little meeting was held in this place to see what could be done to beautify our city. The audience to-night shows that many of you are taking an interest in this forward movement, which is making great strides in the United States. Much of the good work being done in places has been due to the ladies. We intend to enlist the ladies in this work before our next season's campaign opens. At our last meeting it was decided to continue the floral competition as previously, and in this we had splendid assistance. The Evans Seed company offered prizes for asters and the Spectator Printing

FIG. 2473. GARDEN AT BOWBROOK, RESIDENCE OF ADAM BROWN, HAMILTON.

company generously donated prizes for competitions among the children of the city. Then the society offered prizes for window boxes, and it was perfectly wonderful the number shown through the city during the season. It kept the box manufacturers and the florists busy supplying the demands. All this sort of thing is having its effect upon the children, leading them to a higher and better civilisation. In connection with our work, while we have much to be thankful for, there are some things that have not suited us. Strangely enough, it was from those from whom we expected most support that we got least. The churches and schools showed practically no improvement.

Mr. Steele reviewed the work of the society during the year with the City council. He spoke of the collection of garbage, the gathering of waste paper, the caring of shade trees, the repairing of roadways, the snow cleaning by-law and the weed cutting regulations. Speaking of the dog nuisance, he thought if the present by-law was carried out strictly it would suit the public generally. He knew of many citizens whose gardens were ruined early in the season by dogs. He also wished that the white wings brigade could be again dressed in white.

Newton D. Galbreaith took charge of the prize distribution, and at the outset, explained the system of dividing the city into four districts for the purposes of the Spectator Printing Company competition among children—$100 in cash and $25 in bulbs and seeds.

Mayor Hendrie, who took Mrs. Hendrie's place in distributing the Spectator's prizes, apologised for her absence, it being impossible for her to reach the city in time to perform the pleasant task. He thanked the ladies of the Improvement society for the beautiful way in which they had decorated the council chamber. The giving out of

FIG. 2474. GARDEN OF ADAM BROWN, BOWBROOK, HAMILTON.

these awards, was, he said, a particular pleasure to him, for he felt sure that the children, who had thus started out in the right way, would make the members of the Improvement society in future years. The mayor then handed out the prizes to the the girls in the Spectator competition, the winners being heartily applauded as they came forward.

Rev. Canon Forneret handed out the prizes to boys in the Spectator contest, and prefaced his pleasant task by some timely remarks. He advised the young people to put their money in the bank or else use it in improving their gardens.

The making of beautiful gardens was the positive side of city improvement. He wanted the children to remember that there was another side. If they would be careful not to litter paper, peanut shells, etc., on the streets they would be doing a great work also. He then handed out the prizes, the winners being heartily applauded as they came forward.

Adam Brown handed out the prizes in the adult competition promised by the Spectator Printing Company. Mr. Brown was pleased to see so large an audience. It was a great satisfaction to the two promoters of the City Improvement society—the irrepressible and the indefatigable—Mr. Steele was the irrepressible and Mr. Galbreaith the indefatigable, and they both deserved all praise for the work they had done in making the wilderness blossom as the rose. In a short speech Mr. Brown impressed upon the audience the great value of the inculcation of a love of flowers among the children of

the city, quoting from Edward Owen Green, the great leader of the flower culture movement in England, as follows :

"Our eyes, our ears, our senses of touch and scent are so many avenues by which various faculties of the mind are reached, exercised and developed. A good and capable teacher recognises this, and works largely by what are called object lessons. Place a child in a garden, amid the perfume and beauty of flowers, the songs of birds, and ripple of running water, the successive development of leaf and bud, and flower and fruit, and you enforce the exercise of his best mental powers by a sweet compulsion of which he is almost unconscious. And what is true of a child is true of the grown man and woman, though the effects of the silent teaching may not be so rapid as the growing child.

"So I come to my moral and my message. "I say to the teacher of childhood, whether you be father or mother, or other of nature's monitors, or whether you be one who has taken as a profession the highest of all callings—I say to you—give the children, if you can, a bit of garden ground, or failing that, a few plants in pots or window box to tend. Associate yourself with their work of flower culture. Teach them to do the best for their floral friends, and tell them all you know yourself of the mysteries of plant life. You will find health and growth of mind in your little ones flowing happily from their garden work."

Flowers were not only a pleasure to those who cultivate them, but were a blessing to the sick and afflicted in hospitals and sick rooms. Those who encourage their children in a love for flowers will not have much cause for worriment about them in after years.

FIG. 2475. J. M. HALL'S GARDEN, HANNAH STREET, HAMILTON.

FLORAL NOTES FOR NOVEMBER

BY

WM. HUNT,

SUPT. GREENHOUSES, O. A. C., GUELPH, ONT.

FLOWER GARDEN.—If the weather is sufficiently open and no hard frosts prevail, this will be found the most suitable time for making new walks, flower beds or borders, as the winter rains and snow will assist greatly in settling the soil down before spring operations commence. Some planting of the hardier varieties of border plants can also be done to advantage. German Iris, Pæonies, Hemerocallis or Lemon lily, Dielytras or Bleeding Heart, as well as Lily of the Valley, are varieties that succeed well if planted late in the autumn. If left until spring, they are often overlooked and forgotten until it is too late for them to take root and give flowering results the same season. It may be advisable, however, to give these late planted varieties a mulching of leaves or long strawy manure later on, before very severe weather sets in. The Iris would probably be better without being covered up or mulched, as mulching is liable to damage and smother the growth, Fibrous rooted varieties of hardy border plants, such as Gaillardias, Phlox paniculata, Coreopsis, Rudbeckias, etc., succeed better transplanted in early spring.

FIG. 2476. GLOXINIA GRASSIFOLIA.

BULBS

Most varieties of spring flowering bulbs, such as Tulips, Crocuses, Snowdrops, Scillas, Chionodoxas, as well as the Daffodil Narcissui, require very little, if any, covering during winter, excepting in very cold localities, or when the bulbs were planted very late in the season. A light mulching of long strawy manure would be beneficial to these latter if applied before severe weather sets in. Hyacinths, however, in almost all localities, are greatly benefited during severe winters by having a mulching of long strawy manure four or five inches deep spread over the ground where the bulbs are planted. Three or four inches of leaves with a light covering of long grass or manure, or even pine boughs or brush to keep the leaves in place, make a splendid protection for bulbs in winter, and is often easier to be obtained than long manure.

ROSES

Budded plants of even the hardier varieties of out-door roses are better if given some extra covering during winter. Banking the soil up in a conical form about a foot in height around the plant will afford great protection to out-door roses in winter. A mulching of strawy manure or leaves in addition to this would also be beneficial. In localities where the temperature is often for a long period below zero, some extra protection even to this would be advisable. Long straw, an inch or two in thickness,

bound around the tops, would be a benefit where extreme cold prevails, and where, perhaps, the snow fall is light or uncertain. The rush matting used for covering tea chests, wrapped several times around the plant, makes a splendid winter covering for roses or any tender plants, as it to a great extent, excludes moisture, and still allows a circulation of air to the plant sufficient to prevent rot and mildew—the latter often occuring when plants are covered up too closely so as to admit no air at all to the plant.

Roses on their own roots are hardier than budded or grafted plants. Even these would benefit by some protection around about the base of the stem and over the roots, even if the growth was not altogether covered. It is best in all cases, however, to leave the mulching or covering of plants until late in the season, when severe weather is likely to set in, so as to allow the growth of the plant to harden off in a natural way fully exposed to the air.

A very essential point in protecting plants in the manner described is to so arrange the covering, whatever it is, so that it excludes as much moisture from the growth as possible. An old flour or sugar barrel minus the lid, turned bottom up over a tender rose or shrub, is a good protection. Holes should be bored around the sides to admit air, but the top of the barrel, when turned up, should be water tight and intact. Some straw or leaves placed or tied around the plant before it is covered with the barrel would be beneficial.

WINDOW PLANTS

The advent of colder weather means increased fire heat, the latter also meaning an increased aridity or dryness of the atmosphere. The latter condition will probably induce a visit from insect pests, unless precautions are taken to prevent their appearance. Green fly and red spider are most to be feared, especially the latter, as their appearance is not as easily detected as that of the aphis or green fly. Copious sprinkling and syringing with cold water is the best preventive for the attacks of the so-called red spider. Salvias, Fuchsias, Roses and Carnations are first favorites with this little pest. When first attacked, the leaves of these plants present a whitish, dusty-looking appearance, especially on the underneath side, and the leaves will soon commence dropping unless the plants are regularly and thoroughly sprinkled or syringed once or twice every day. Tobacco water, as recommended in the September number is the best remedy for green fly, although tobacco leaf or stems, or even a cigar thoroughly dried and rubbed into a fine powder and sprinkled on the plants infested with green fly will generally rid the plant of them. The latter application is best made after the plants have been recently sprinkled or syringed, as the tobacco dust adheres better when the foliage of the plant is moist.

FREESIAS

Pots of these that are well started should have the full benefit of the sun and sufficient water to keep the soil moist, but not soddened. Freesias do not like liquid manure, and do not require it if the soil they are in is only of a fair average fertility as generally used for pot plants.

REX BEGONIAS

Plants of these that have, perhaps, been resplendent with their beautifully marked foliage, will generally show rapid signs of decay towards winter. This is quite natural in these plants at this season of the year and is indicative that the plants require a period of partial rest, and it is best to allow them this period of partial rest when the leaves present the appearance mentioned. It is useless to deluge the plants with water at the roots as is often done when the plants

show signs of decay. By withholding water gradually from the roots and barely keeping the soil moist, the fleshy rhizomes and stems, and perhaps some of the leaves, may be kept in fair condition until spring or early summer, when the plants can be repotted, or, if that is not necessary, the plants will show signs of new growth as the warm summer weather approaches without repotting. Rex Begonias, and in fact all summer flowering and foliage Begonias, require to be kept in a temperature not lower than 45° or 50° when resting in winter. A slightly lower temperature than the plants have been accustomed to, and only sufficient water to barely keep the soil in the pots moist, are the conditions that induce this partial resting period so essential to almost all perennial plant life at some season of the year. Rex Begonias should never have their leaves sprinkled with water in winter, as it tends to spot and rot the foliage.

GLOXINIAS, TUBEROUS BEGONIAS, FANCY CALADIUMS AND ACHIMENES

All of these should now be resting and the soil left quite dry until time to start them in the spring. I have found that leaving these in the pots undisturbed all the winter is better than taking the bulbs or tubers out of the soil and packing them in sand or charcoal. Where large quantities are grown, it might be necessary to knock them out of the pots to economize space, but where only a few are grown, it is very easy to stand the pots back in a dry place on a shelf, where no drip or water can reach them. A temperature of 55° will suit all but the Tuberous Begonias when dormant; these latter I have found to keep better in a temperature of about 40° to 45°.

THE TRAILING ARBUTUS—HAS IT A PARTNER?

IN the September number of the Horticulturist Mrs. Gilchrist has a good word for the Trailing Arbutus (Epigæa ripens). She asks, "can it be cultivated in the garden," and answers, "certainly." I write this note to invite reports of experience upon the subject. The result of my experiments indicates the conclusion that it cannot be successfully cultivated in every garden. The failure of repeated attempts to introduce it into my own garden and into the woods around London led me to suspect that it may, like some of its congeners among the heathers, have entered into a partnership with some species of mycorrliza. In the absence of the companion of its roots it leads a languishing existence through a season or two and then perishes. The directions given by Mrs. Gilchrist for transplanting the Arbutus do not discredit the supposition that it is dependent on a root partner. It is not improbable that some gardens possess conditions favorable to the growth of the plant and its mycorrliza if it has one. "The good ball of earth" carefully lifted with the plant would carry both. I should like to know whether any one has succeeded in growing and increasing this plant from seed or clean roots in a garden distant from where it is found naturally. "Like the thrush," she says, "it belongs to the woods." That's a good touch. After all it is no great loss if we cannot get the Mayflower to grow in the garden, for there it is like a wood-bird in a cage. The delight with which we recall the plant is not due alone to its color and fragrance. In the pleasantest days in the year we greet it in the most lovely parts of our beautiful woods. The whole situation stirs the soul and the senses, and we vainly attempt to carry the pleasure away with us by filling our arms with the fragrant sprays of the dainty trailer. You must go to the part of the woods it selects for its home to fully enjoy the Trailing Arbutus.

London. JOHN DEARNESS.

ADDRESS TO THE CANADIAN HORTICULTURAL ASSOCIATION.

BY PROF. H. L. HUTT, O. A. C., GUELPH, ONT.

I AM pleased to have this opportunity of addressing your Association, because I have a few fatherly suggestions to offer, which I think are of importance to you.

In the first place I wish to suggest a change in the name of your Association. Your membership, I am told, is made up largely of the professional florists of Ontario. Why not call yourselves then, the Ontario Florists Association? Such a name defines your position among the many organizations in this country better than any other. If you had in your Association members from all of the other provinces there might be no objection to the use of the term Canadian instead of Ontario, but not having these, you are making the mistake of spreading over too much ground, a mistake which florists as a rule are not guilty of. A good strong provincial organization would, I think, carry more weight than a weak organization spread over the whole Dominion. And the fact of your being a Provincial organization need not in the least prevent your having members from any of the other Provinces.

There is one other reason why I think your Association should fall in line with the other Provincial Associations, and that is because you might then, like them, look for a little assistance from the Provincial Government in aid of your work. I may say, however, that I am not authorized by the Minister of Agriculture or any of his Department to make this statement, but do so entirely upon my own responsibility. If you can show that your Association represents one of the important horticultural industries of the Province, that is endeavoring to educate, uplift and benefit the people along the line of beautifying their homes, I see no reason why you should not ask the Department of Agriculture for some substantial assistance in aid of such work as well as the

Fruit Growers' Association,
Dairymen's Association,
Horse Breeders' Association,
Sheep Breeders' Association,
Swine Breeders' Association,
Poultry Associations,
Beekeepers' Association,

and about 200 Agricultural and Horticultural Societies. Most of which are probably doing good work, but none of them doing any more for the general welfare of the people than you could or should do, if you put yourselves about it.

My preference for the term Florist instead of Horticulturist is, because this is an age of specialization rather than generalization. The term Horticulture is a broad general term, which includes fruit growing, vegetable gardening, landscape gardening and horticulture. For nearly thirty-five years we have had an active Provincial Fruit Growers' Association. You might be proud of being known as the Ontario Florists' Association. There is plenty of room for a live Provincial Market Gardeners' Association, and all of these would properly be known as Horticultural Associations. This is enough on this point at present. I suggest the change of name because I think it would be for your benefit.

Now I wish to say a few words with reference to your relation to what are known

as the Local Horticultural Societies. We have now in this Province over fifty horticultural societies, most of which have been organized during the last few years through the efforts of the Ontario Fruit Growers' Association. The greater number of these societies are town societies, and they are quite properly called Horticultural Societies, because their membership, which now numbers 5000, is largely composed of amateurs interested more or less in fruit growing, others in vegetable gardening, but by far the greater number are particularly interested in floriculture.

These societies are doing good work in fostering a love for flowers and giving the people information about how to grow them. It is along this line that you as an association and as individuals might do good work in assisting them. You are both interested in the growing of plants and flowers, the chief difference between you being that they are amateurs and you are professionals. They are growing plants for pleasure while you are doing it for money, and the more pleasure there is in it for them the more money there is in it for you. It is in your interests therefore, from a business standpoint, to stimulate trade by encouraging the amateur in his love for flowers and by teaching him how to care for them. I have heard some professionals say that they did not believe in telling the amateurs how to grow flowers, that this was giving away trade secrets, but if the amateur's plants failed, he would be willing to sell him more. I can tell you this is a very short sighted policy. The secret of the professional's success is in increased demand for plants and flowers. This increased demand depends largely upon the pleasure that the amateur derives from them. And the more successful the amateur becomes as a grower, the more plants he will want. You are widening your money by giving information about growing plants.

There are a number of ways in which you as leaders in floriculture may assist the amateur. In the first place, become a member of your own local horticultural society. If there is not one in your locality, organize one as soon as possible. Encourage the members from time to time to bring out a good display of flowers at your meetings and give all the information you can about them. Whenever there is a fall fair or exhibition held in your locality get your horticultural society to co-operate and bring out as fine a display as possible. Most of our fall fairs are weak along just those lines where you can do the most to strengthen them.

I have spent a good deal of time during the last year in preparing a model prize list for fruits, flowers and vegetables, which, if adopted generally by township and county fairs, would help very much to encourage horticulture along the lines mentioned. These lists will be published in a short time, and may be obtained from Mr. G. C. Creelman, Secretary of the Fall Fairs Association, Parliament Buildings, Toronto. Get one of them, examine it carefully, improve or modify it, if you think necessary, to meet the requirements of your exhibition. Get your Society to adopt it, and encourage all the competitions you can among your amateurs. Do not make the mistake of trying to win all the prizes yourself. That might be gratifying in one sense, but it would pay you better to get as many amateurs competing as possible, and you can make your little pile furnishing them with plants.

In conclusion, I would ask you to give all of us the benefit of your experience by contributing an article once in a while to the Canadian Horticulturist, which goes to all the members of the local horticultural societies. Our friend, Mr. Hunt, has been doing nobly in this respect for the past two years, and his articles have helped your trade much more than you imagine. But a number of short articles by different members of your Association would be welcomed, not only by the editor, but by a of us.

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution plants and trees.

REMITTANCES by Registered Letter or Post-Office Order addressed The Secretary of the Fruit Growers' Association, Parliament Buildings, Toronto, are at our risk. Receipts will be acknowledged upon the Address Label.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

ANNUAL MEETING OF THE ONTARIO FRUIT GROWERS' ASSOCIATION.

The next annual meeting of this Association will be held at Walkerton, Ontario, on December 1st, 2nd and 3rd, 1902. As the fruit-growing industry has become so important in this country, it has been deemed advisable to devote the entire time of the Convention to matters pertaining to fruit, but realizing at the same time that the subject of Floriculture, the growing of Plants for the Home and Home Grounds, Care of Lawns and of Gardens, are also important, arrangements have been made whereby separate sessions will be devoted to this work. The best talent that can be procured has been engaged for the meetings, and it is expected that this year will mark a new era in the progress of the Ontario Fruit Growers' Association.

PROGRAMME.

On Monday afternoon, December 1st, there will be a meeting of the Directors at 3 o'clock, when the Secretary will read his report of the year's work, and business matters pertaining to the management of the Association will be discussed. At this meeting each of the Directors will present a written report of the year's work in Horticulture in his district.

On Monday night the Minister of Agriculture, Hon. John Dryden, will address the meeting, as will also Dr. James Fletcher, of the Central Experimental Farm, Ottawa; Prof. Wm. Lochhead, of the O. A. C., Prof. John Craig, Cornell University, Ithaca, New York, and others.

On Tuesday morning, at 9.30, the fruit

display of the Fruit Experiment Stations will be arranged, after which the meeting will take up the reports of committees on New Fruits, San Jose Scales, Codling Moth and Transportation.

The afternoon of Tuesday will be devoted entirely to the subject of Apples. "**Varieties**" will be discussed by Prof. John Craig, of Cornell University; Mr. L. Woolverton, G. C. Caston, Craighurst; W. H. Dempsey, Trenton; Harold Jones, Maitland; T. H. Race, Mitchell, and others.

The subject of "**Packages**" will be introduced by Mr. W. H. Bunting, St. Catharines, and Mr. A. McNeill, Acting Chief Fruit Division, Ottawa. The **Grading and Packing** of apples will be taken up by Mr. McNeill, Mr. Carey and Mr. Lick, all Dominion Fruit Inspectors. These gentlemen will at the same time explain the workings of the "Fruit Marks Act."

"**Markets and Marketing**" will be discussed by Mr. E. D. Smith, Winona; A. W. Peart, Burlington; H. W. Dawson, Toronto.

"**Controling Soil Moisture in the Orchard**" will be the subject of a paper by Prof. J. B. Reynolds, of the O. A. C., Guelph.

On the evening of Tuesday, December 2nd, Prof. John Craig, Cornell University, Ithaca, N. Y., will be on the programme, also Mr. C. C. James, Deputy Minister of Agriculture; Prof. H. L. Hutt, and Prof. Wm. Lochhead, of the O. A. C., Guelph, and Mr. Wm. Orr, Fruitland.

Wednesday morning will be devoted to the work of the Fruit Experiment Stations, when the Director of each Station will be present and give an account of the work done at his Station, the varieties recommended for their localities, etc. The information thus imparted ought to be extremely valuable to the fruit growers of the Province.

On Wednesday afternoon unfinished business, the St. Louis Exposition, and such matters as have been crowded out will be taken up, and if the work of the Convention is finished the meeting will then adjourn.

FLORICULTURE.

On Tuesday afternoon and Wednesday morning separate meetings will be held, where the programme will be devoted entirely to Floriculture. Mr. Wm. Gammage, London; A. H. Ewing, Woodstock; J. H. Dunlop, Toronto; Hermann Simmers, Toronto; T. H. Race, Mitchell; Arch. Gilchrist, Toronto Junction; Dr. James Fletcher, Ottawa; Prof. Macoun, Ottawa, and Prof. H. L. Hutt and Mr. Hunt, of the O. A. C., Guelph, and others have been invited to take part at these sessions.

With such a formidable array of talent there should be no doubt about the success of both meetings, and we trust that as many members of the Horticultural Societies throughout the Province as possible will avail themselves of the opportunity and attend the meeting at Walkerton.

G. C. CASTON, Craighurst,
President.

G. S. CREELMAN,
Parliament Buildings, Toronto,
Secretary.

GRAFTING WAX.—The following is Luther Burbank's recipe:—One pound tallow or raw linseed oil. Two pounds beeswax. Four pounds resin. Slowly melt all together, stir well, and when partially cooled pour into pans which have have been moistened or oiled to keep the wax from clinging too tightly to them. For use it should be melted and applied carefully over all exposed cuts and open cracks around the grafts. A small paint-brush is the most convenient for this purpose. It can be applied safely much warmer than can be borne by the hand, but care should be used not to have it very closely approaching the boiling point of water.

Horticultural Society Exhibit.—Mr. W. W. Hillborn, of Leamington, writes that the Leamington Society has secured several fine exhibits of fruit from local fairs and has forwarded them to be held in cold storage at London, Ontario, until the proper time and then will send them up to Walkerton to be exhibited at our annual meeting.

All Our Experimenters are also invited to be present at our Walkerton meeting, and will come prepared to give much imformation about new varieties of fruit which they have under test.

The Charlottetown, P.E.I., Exhibition seems to have included an unusually fine display of apples. The Maritime Farmer says: It is apparent that in the future and the very near future at that, Prince Edward Island must be reckoned with in the fruit markets of our country. It was not alone the question of quality but quantity as well. This last is possibly a source of actual weakness, as farmers have in the past been largely at the mercy of the salesmen in choosing varieties and have in consequence a multiplicity of sorts weich are little known and of less value for export purposes.

There was one group which could always be found gathered around these tables in the centre of the building. It consisted of Rev. Father Burke, the aggressive President of the Association, beaming on everyone as the surprise of the visitors was voiced; Secretary Dewar; Inspectors Richard Burke and G. H. Vroom, who have this summer been strong in preaching the gospel of good orcharding on the Island; Senator Ferguson; and John Robertson, of Inkerman, the largest orchardist of the province, we are told. These men have a right to be enthusiastic. The possibilities ot orcharding there are beginning to reveal themselves and the future is one of great promise. Father Burke informed us that next season will witness a readjustment of their prize list and a weeding out therefrom of all but the commercial varieties. He argues, and is supported by his executive, in favor of an exhibition work which shall not only be illustrative but educative in that it will endeavor to discourage orcharding which is other than of the dollars and cents description. This is as it should be.

Question Drawer

The Ontario and the Crimson Beauty Apples.

1316. Sir,—As a life member of the American Pomological Society I am anxious to know more about two Canadian apples:—(1) The Ontario. How does its market value, in desirability or popularity, compare with the Northern Spy or the Wagener, also in keeping quality? Both succeed here, bear early, and the Wagener will keep till spring. I am anxious to know if the Ontario is better than either for market. (2) The Crimson Beauty. What is its rank in excellence with other popular apples for fall and winter, and what nurseries keep these?

Hood River, Oregon. Henry T. Williams.

We do not think Ontario quite equal in beauty or even in quality to the Spy, nor is it quite as good a keeper, but the tree begins bearing so much earlier that you get paid for the investment before the Spy begins. Wagener is inferior to both commercially. The fruit grows uneven in size, and is troublesome to handle for market, because it ripens so rapidly.

The Crimson Beauty, known also as Scarlet Pippin and Crimson Pippin, is a seedling raised near Brockville, and not only beautifully colored, but an exceedingly handsome dessert apple. No doubt these varieties can be purchased either from E. D. Smith, Winona, or Stone Wellington, Toronto.

A Curiosity.

1317. SIR,—I send by post, herewith, a specimen of the product of a curious peach (curious at least to me), tree, for you to submit to an expert or some authority on fruit, to examine and say if it is worth cultivating; the tree is an accidental self sown one, origin unknown; the fruit inside the skin if of a deep red color, unlike any that I have ever seen, and seems to indicate a new variety, but possibly it may be common to others although new to me.

Pardon my troubling you with it, perhaps I should have sent it to O. A. C., Guelph, for examination and report.

A. VIDAL, Sarnia.

This is certainly a singular freak of nature, but, in our opinion, of no commercial value.

To Destroy Poplar and Locust Trees.

1318. SIR,—We have some silver-leaf poplars and locust trees we wish very much to get rid of, root and branch (roots particularly). Could you advise us of some means of killing them before cutting down.

H. J. G.

We would advise girdling the trees toward the end of June, and then digging them out by the roots in the fall. This is easier done if the top is not cut off, for a rope can be attached to it, and, as the roots are cut, the whole tree is the easier pulled over.

A Winter Dessert Apple.

1319. SIR,—Which is the best late winter dessert apple for this section? I want one of good quality for home use. The Ben Davis has been recommended to me, but I understand the quality is not the best. I prefer a large apple.

Carleton Place, Ont. THOS. MCQUAIG.

We would think that McIntosh Red would please you as well as any for dessert purposes; it is larger than Ben Davis, and of special value for eating. Another very fine apple for northern sections is the Wealthy, which unites beauty and size with very good quality, though in southern sections it ripens rather early.

The Phœnix Apple.

1320. SIR,—I notice in the July number, Mr. Carey recommends the Phœnix apple. Would you please describe this apple for me. I can find no trace of it in either the Experimental Farm Reports or in the Nursery Catalogue.

Berwick, N. S. A. J. TURNER.

This apple is not grown to any great extent, unless in a very few sections; perhaps it is as well known in some parts of Illinois as any where, and in some parts of Ontario. The buyers seem to like it, because it makes very few seconds in packing. Downing thus describes it: Fruit medium, roundish, slightly oblate, skin light yellow, faintly shaded, splashed and striped with rich red, and with a few light and brown dots. Flesh yellowish, coarse, moderately juicy, sub-acid, good. December to March.

A Disputed Variety.

1321. SIR,—I enclose to your address in a box three apples for identification. They were entered at the Clarksburg exhibition for Ribston, but the judges say they are not. They are under protest, and were given to me for identification. Will you please name them?

The apples are probably the Red Russet. They are quite distinct from Ribston, a variety which we have grown at Maplehurst for many years.

Allenby's Seedling Apple.

1322. SIR,—I am expressing you a basket of seedling apples grown on a tree amongst shrub bushes in a field adjoining my garden and orchard in Galt. In the opinion of several the apple is of superior quality for dessert and for cooking as well. The tree is wonderfully productive, loaded down with fruit just now ripe. It was gnawed by rabbits some years ago when it was quite small, and is dwarfed in height, with branches spreading and bending down amongst the grass. No spraying has been done, and the fruit is clean and practically free of worms. As it is a seedling I would like you and your friends to examine it and tell me whether you think it would be valuable to apple growers. If you do I propose calling it the Lindum, the Latin name for my native city, Lincoln, in England.

Galt. F. G. ALLENBY.

The apple is a very handsome one, somewhat resembling the Maiden's Blush in appearance, though less oblate. The skin is white, with bright red blush in sun and duller red in parts. The stem is about an inch long, set in a remarkably deep regular cav-

ity, and the calyx is large, open and set in a large abrupt wrinkled basin. The flesh is snowy white, tender, almost butter tincture, fine grained, fairly juicy, and of refreshing agreeable flavor. We should count it good as a dessert apple, and very valuable in the amateur's garden, but too tender for export.

Top Grafting.

1323. SIR,—Could large apple trees, of an undesirable variety, be grafted to form a new head, and, if so, how would you proceed?

Carleton Place, Ont. THOS. McQUAIG.

FIG. 2477.

Certainly, old trees of undesirable varieties, if still vigorous, may and should be top grafted; indeed it is a foolish waste to allow trees to continue bearing unsalable fruit, when in two or three years they can be made to produce salable kinds.

The best time to undertake the work is in May or June. Limbs in various parts of the head, not over two inches in diameter, may be sawn smoothly off, and split with a grafting chisel to receive the beveled end of the scion as shown in our engraving. One important point is to so unite the cambium or inner bark of the parts that the growth may continue. Care must always be taken to have the scions cut well in advance, before the buds have begun to push. After the graft is set, it is important to protect the cut surfaces from the air by grafting wax.

Plum Differences.

1324. SIR,—I to-day take the liberty of mailing you a sample of two varieties of plums, and should be much pleased if you would name them. The smaller was bought for Shropshire Damson from E. D. Smith, Winona, Ont., but the judge of fruit at the Charlottetown exhibition gave the prize to a plate of similar plums entered under the name of Blue Damson. The larger is locally known as the Old Blue and has been in cultivation for a great many years and comes true from pits and suckers. It is a great bearer, and before the advent of the knot every farmer who chose to plant a few trees had abundance of plums, but the tree is very susceptible to the knot and is now very little grown. A plate of this variety was awarded first prize as Shropshire Damson. To me it appears more like a small variety of prune, probably introduced by the early French or English settlers, as it is a freestone.

What do you think of Spaulding as an early plum? Is it as hardy as the ordinary Domesticas, such as Bradshaw?

What are the distinguishing points between McLaughlin and Jefferson? Also between Imperial Gage and Huling's Superb?

By answering the above questions in the November issue of the Horticulturist you will greatly oblige.

Lower Montague, P. E. I. D. J. STEWART.

The small samples sent by our correspondent are Shropshire Damson, if the trees of that variety in our experimental plot are correctly named; but the other samples were too much smashed to identify.

The Spaulding is of good quality, and so far as we know quite as hardy as Bradshaw.

Jefferson and McLaughlin considerably resemble each other, but the stem of the former is shorter and the stone is free, while that of McLaughlin is cling.

Huling's Superb is a larger sized plum than Imperial Gage, and a clingstone; while the latter is nearly free and rather better in quality.

New Apples.

1325. SIR,—I am sending you by this day's express a box containing several apples, as follows:

No. 1 Seedling, submitted by Miss Dunlop, Price's Corner, post office, Township of Medonte; two samples.

No. 2 Seedling, grown by C. L. Stephens, Orillia; two samples.

Mr. Race, whom we had at our Fall Show, approves of both in their season and for this section. No. 1 is about 10 or 11 years from seed, and bore a few apples last year, and a fair crop this year. No. 2 is 7 or 8 years from seed, or perhaps only 6 years. It was brought to me quite a small tree 5 years ago, it has made a thrifty but not vigorous growth; this year it bloomed for the first time, and bore 5 12-quart baskets of fruit. The samples of Nos. 1 and 2 have been picked since the 18th of September, and have been in my cellar since the 22nd. I also send a few varieties for which I would like to get correct names.

No. 3 has come to me under three different

names, "Quebec Winter Sweet," "Jersey Sweet," and "Princess Louise," in each case the grower being quite sure that he bought tree under the name mentioned; two samples.

No. 4 is called by each of two persons, "McIntosh Red" and "Princess Louise." Is it either? It looks like McIntosh as shown here.

No. 5 is called by growers "Quebec Winter Sweet," but hardly looks like a winter apple.

No. 6. The scions were given to me as "Princess Louise." What is it?

I shall endeavor to keep samples of the two seedlings until the December meeting at Walkerton, and submit them there; and I shall be very much obliged if, in the meantime, you can give me the correct names of the others.

Orillia. C. L. STEPHENS.

No. 1 is certainly a beautiful apple. It is large, regularly formed, and beautifully striped all around with rich bright red on a yellow ground; the flesh is very white, with slight tints of red near the skin; it is fine, and almost tender in texture, fairly juicy, and of fairly good flavor, though scarcely tart enough for the taste of many people. Probably this apple deserves further testing as a fancy fall apple.

No. 2 is a good apple, but in our opinion scarcely striking enough in appearance and distinctive in flavor, take a place with varieties already cultivated.

No. 4 is McIntosh Red.

No. 5 is a total stranger. None of the apples at all resemble Prince Louise (or Woolverton).

Notes from the Horticultural Societies

Regina, N. W. T. The first annual flower show, under the auspices of the Assinoboia Horticultural Society, was held on the 21st of August last, and was a complete success. The tables of the hall were covered with red, white and blue bunting, and flags here and there added to the appearance of the room. What might be termed the national flower of the west—the beautiful and fragrant sweet pea—was shown in many colors and tints, among them being one which attracted very great attention. This was "Burpee's Little Fairy" grown by Mrs. R. M. Napier. It is altogether different from other sweet peas and resembles somewhat an apple blossom half opened. Mrs. R. E. Tennant's first prize collection and the thirty-four varieties shown by His Honor Lieut. Governor Forget were also very beautiful. Eight beautiful varieries of hollyhocks were also included in the Government House collection, while several trees and shrubs from the conservatory lent to the decoration of the large centre table.

Another handsome display was that made by the Government Offices, which included a delicate and very beautiful wreath.

Among other notable plants were an asparagus shrub shown by Mr. G. Michaelis, a lemon tree bearing fruit by Mr. R. B. Ferguson, and a sassafras shrub grown by Mrs. Wm. Rothwell, from seed sent from Honolulu.

There was a good attendance at the musical promenade in the evening, when the orchestra, under the direction of Mr. J. S. Demis, rendered a number of pleasing selections. The officers and members of the society are deserving of heartiest congratulations on the splendid results of their efforts.

Napanee. SIR,—We had a very successful "Flower Carnival" the other night, and the booth where we had our tea and cocoa looked so exceedingly lovely we had it photographed. I am sending you a copy, thinking you might find a place for it in the Horticulturist, and I enclose you a clipping from a local paper, giving an account of the carnival. Feeling sure you take an interest in your affiliated society, you will be glad to hear that it is acknowledged on every side that our Society has done wonders in improving our town. The Society continues in a very flourishing condition, and still has for its president, Yours sincerely,

ISABELLA A. WILKISON.

FIG. 2478. BOOTH AT NAPANEE FLOWER CARNIVAL

FLOWER CARNIVAL.

"The Horticultural Society of Napanee held its annual flower show in the town hall on Friday last, afternoon and evening. The exhibits of cut flowers and pot plants were very varied, and interesting as showing a development of an improved taste in the selection of plants to beautify the home since the inception of the society some years ago. Some magnificent blooms in cut flowers were much admired, as were most of the well developed pot plants. Great pains had been taken by the ladies to arrange the flowers so as to show them off to the best advantage, and their taste was approved by the visitors. The town hall is usually rather a dull room, but on this occasion it was converted into a a bower of beauty, made gay with choice blossoms of every conceivable shade of color, set off by foliage of different shades of green and various habits of growth. In one corner was a floral booth, surrounded by an artistic fence of flowers and vines. In this pretty spot delicious tea and cocoa were served under the supervision of Mrs. J. L. Boyes and Miss Belle Pollard, assisted by Mrs. Herrington and Mrs. F. F. Miller. The President was assisted in the decorations by the directors and many of the members, more particularly by Mesdames J. L. Boyes, Rockwell. Gordon, Clarke, Gordanier, Flach, Herrington, McNeil, and Misses Mill, Belle Pollard and Wigmore. The Horticultural Society officials have to thank Mrs. Moodie, of Toronto, and Miss Sinclair, of Orillia, in assisting Mr. Hart in a very good musical programme, which added very much to the enjoyment. Mr. Hart gave varions selections on his pianuto."

Kincardine.—I enclose you a photo of a branch of peaches grown in the garden of Mr. E. Miller, who has been a member of our society from the beginning. This branch was brought to our exhibition on the 5th of October, bearing twenty-four peaches. The total product of the tree was over one bushel and this is only the second year of fruiting. You see after all we are not too far north to grow this luscious fruit.

JOSEPH BARKER, Secretary.

FIG. 2478. A PROLIFIC BRANCH.

THE APPLE MARKET ABROAD.

NEW YORK, Oct. 30, 1902.

The cables from the foreign markets for apples show a better feeling in fancy fruit, but a large portion of shipments are arriving in poor order. Keiffer pears are quoted low and unsafe to ship. The prevailing prices abroad are:

Liverpool—Baldwins, 12s to 15s; Russets, 11s to 14s; Spys, 11s to 14s; Greenings, 10s to 13s; Kings, 13s to 16s; Wagners, 12s to 15s; Seeks, Spitzenberg, Ben Davis, 10s to 13s Newtons, No. 1, 21s to 25s; No. 2, 15s to 17s; No. 3, 12s to 14s. Only choicest fruit brought the high quotation. The inferior quality of apples is having a bad effect upon the market, and damaging prices generally. Dealers are afraid to touch fruit, as heavy losses have been sustained lately. Keiffer pears, 7s to 10s, in barrels, are arriving in bad condition. Boxes, 4s to 6s, good order. California Newtons, in four tier boxes, 9s.

Glasgows—Kings, 16s to 20s; Baldwins 14s to 16s; Greenings, 11s to 13s; Ben Davis, 13s to 16s; Newtons, No. 1, 20s to 23s. There is good demand for sound clear apples.

London—Baldwins, 13s to 16s; Greenings, 11s to 14s; Ben Davis, 12s to 15s. California Newtons, in boxes, 9s to 10s.

Hamburg—There is a great demand for superior sorts of apples in this market, prices ranging from 11s to 17s.

FIG. 2179. THE SECKEL PEAR.

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THE SECKEL PEAR

OUR frontispiece is an excellent representation of the Seckel pear, a variety that is everywhere acknowledged to be the very finest dessert pear in cultivation. This pear originated on the farm of a Mr. Seckel, of Philadelphia, near the Delaware River. No one seems to know anything about the origin of the original tree, which bore its first fruit about the year 1765. In 1819 a tree of this pear was planted in the garden of the London Horticultural Society, and the fruit was pronounced "to exceed in flavor the richest of their autumn pears."

For years we have grown this pear at Maplehurst, both as a standard and as a dwarf, and must pronounce in favor of the latter for beauty and for quality. For the garden of the amateur who wants the finest quality of pear for his table, or for the connoisseur who wants to complete an interesting collection, we know no pear so desirable ; indeed it should find a place in every fruit garden which is planted for home uses ; but we do not consider it advisable to plant it largely in the commercial orchard on account of its small size. True, very high prices have been secured for the Seckel pear in special markets where it is well known, but, as a rule, the buyer of a fruit looks for size as well as for beauty and quality, and the commercial grower must not expect ready sale for small sized pears or small sized apples.

The tree is readily distinguished from other trees in our experimental grounds by the olive brown color of the wood, its short stout joints, and the compact, symmetrical head. The fruit itself has a deep, yellowish brown color, with a bright red cheek ; the flesh is very fine grained, melting and juicy ; the flesh is honey sweet, with a spicy and delicate aroma ; season September to October.

OPINIONS OF OTHERS ON THE VALUE OF SECKEL.

MR. T. H. RACE (Mitchell) :—By its very nature the Seckel pear is a dwarf. It may be a paradox to say that, so far as size goes, it is less a dwarf when grown on a dwarf tree than when grown upon a standard. As a standard the tree is inclined to load too heavily and the fruit to run too small, the tree itself grows too thick and close if left to itself, and the wood is too brittle to stand much, or any trimming. A dwarf tree, if inclined to over-load, can easily be thinned, and a good sized fruit may always be obtained. It is not so easy thinning a standard, and if the tree is cut out to lessen

its top, every wound will sooner or later lead to a fatal termination of the part affected owing to the brittle nature of the wood. In brief the Seckel should be grown as a dwarf where it can be done. As a standard it should be trimmed very sparingly, and the fruit thinned if size is desired.

W. WARNOCK, (Goderich):—I consider the Seckel pear one of the very best dessert pears of its season. I know some trees here that have been bearing fruit for the last forty years, and they look healthy enough to continue for forty years to come. The tree grows to the greatest perfection here, and is a regular bearer.

A. M. SMITH, (St. Catharines):—I consider the Seckel one of the best dessert pears we have. The tree is free from blight, is a regular and abundant bearer; to get the best results it should be regularly fertilized and pruned. Though the fruit is small, it will attain a fair size if well thinned and will bring a good price.

W. W. Cox (Collingwood):—The Seckel is not much grown in this section. People want quantity rather than quality in this country. It does well here, and I consider it one of the best pears grown. I believe it will be called for a few years hence.

Notes and Comments

A COMMERCIAL PEAR ORCHARD.

DO you advise me to set out a commercial pear orchard of standard pears? I had some notion of setting Tallman Sweets for grafting Spys and Baldwins, and setting dwarf pears between.

Where can I buy good trees the cheapest? By *good* trees I do not mean the largest, but thrifty and true to name.

MORLEY HOWELL, St. George.

We are inclined to favor the planting of dwarf pears and small fruits in the apple orchard, until the trees require the whole ground; and indeed after it is full grown, in case the owner has only a limited amount of ground to cultivate. As a rule a dwarf tree has seen its best inside of twenty years, and it takes all that time for an apple tree to reach its best days. In planting a commercial pear orchard one must be guided very much by the market for which they are intended. The foreign market is attended with great risk of loss, should the variety be inferior or the conditions on shipboard be unfavorable. Ordinarily speaking the near market is the safest, for this a large number of varieties may be planted ; while for export it is best to plant only one or two kinds, and those the largest and finest that will succeed in the locality.

Fine trees may be purchased at reasonable rates from any of the nurserymen advertising in this journal.

PRICE OF APPLES AND PEARS IN GREAT BRITAIN

SIR,—Is there any record kept anywhere of prices which Canadian fruit fetches in Great Britain? Have pears been selling well in the Old Country this year? What kinds sell best?

MORLEY HOWELL, St. George.

Every week we get reports of actual sales of Canadian apples in Glasgow, Liverpool or London. Just now we have opened a report of 25,000 bbls. at Liverpool, and fine Baldwins were sold at 15s., or $3.65 a barrel, which would net the shipper a little over $2.00 in Ontario. Poorer stock sold down to 7s., or about half, and would only net from 75c. to $1.00 ; while fine Kings sold as high as 20s., or about $4.87 a barrel !

Pears have not realized as high prices as we had expected. Our Bartlets sold in Glasgow from 5s. to 6s. a half bushel case, and our Duchess at from 4s. to 6s., rather low

compared with prices obtained some previous years.

Probably such choice goods in small packages should not be sold by auction, but rather by private sale ; for in this latter way each case is sold upon its merits, and not at the mercy of a public market. We are credibly informed that buyers at the public auction often put their heads together and let one bidder establish the price, and then divide the spoils. No doubt, now that we have cold storage, and our fruit can be held, the necessity of quick sales will be done away, and we may expect to sell our fancy packages by private contract, and thus realize their full value.

CHOICE APPLES AT HOME

MR. JOHN BRENNAN, Grimsby, will not export his choice Spys. He sells them by private sale in Canada, and says he has realized this season as high as $1.75 a bushel box for them on private order. Does not this prove that there are always people in every country who are ready to pay a high price for such goods ?

THE FRUIT MARKS ACT

"I THINK," said Mr. G. E. Fisher, of Burlington, "that this Act needs a thorough revision. It compels people to do what they cannot do, gives them no advantage if they do it, and punishes them if they don't do it. The speculator uses it to frighten the grower into taking a low price for his apples, and the grower who packs his own fruit in fancy grades is compelled to mark it XXX when it is far superior to ordinary fruit of that grade."

Don't you think the value of Canadian apples abroad is advanced by the Act ?

"Possibly, but it does not provide any basis for contract. No court will declare a sale valid if the buyer refuses to pay on the ground of the fruit not being up to grade. There should be provision for government inspecting and branding, so that a seller could get a certificate of grade from an inspector for a car load of apples, and sell on that government grade. Then his sale would be final.

"The Act is not what we growers want ; we must have a committee to take up the matter, and take time to go into it fully."

FALL PLOWING

I HAVE read that where an orchard is to be set out the soil should be loosened up with a sub-soil lance.

I am thinking of putting out a pear orchard, and perhaps an orchard of Tallman Sweets for grafting next spring. When should I sub-soil the ground? this fall, or would the changing conditions of winter render that work useless by spring. Please let me know at once about this, as I want to plow the piece now, and if you advise it I will put the sub-soil lance on the plow this fall.

MORLEY HOWELL, St. George.

The preparation necessary to fit soil for fruit trees depends very much upon its texture. In deep, rich sandy loam, where there is considerable humus, little attention seems necessary except ordinary plowing and thorough harrowing of the surface soil ; but in the case of soils more close in texture, the deeper the previous cultivation the better. Indeed no after-care or cultivation of the surface can ever make up for neglect of this deep moving and enriching of the soil, in which the roots are to spread, and for which they are to draw their nourishment. This work should be done in autumn, so that the excellent action of the winter's frost may help unlock nature's fertility, and at the same time have a mechanical influence in fining the texture of the ground. Downing says "no fruit tree should be planted in a hole of less size than three feet square and eighteen inches to two feet deep," and again "the most skillful cultivators among us make their spaces four or five feet in diameter, or three times the size of the roots, and it is incredible how much the luxuriance and vigor of growth, even in a poor soil, is promoted by this."

A COMMERCIAL APPLE ORCHARD.

I AM going to plant out two acres in apple trees for commercial purposes. I had decided on Astrachan and Duchess for early, and Wealthy for fall, and King or Baldwin for winter. Would you recommend my choice for winter apples, and would it be variety enough for this quantity, or could you recommend any change (excepting Ben Davis and Spy)? I want apples of good quality and appearance.

Is King and King of Tompkins the same? I have been told by agents that they are distinct and different. If so, which is best, and can it be got from any of our nurserymen? An answer through your paper would oblige.

C. H. DAVIS, East Toronto.

We would advise planting lightly of summer apples for commercial purposes. There is little or no sale for them in our home markets, and the export in cold storage is so expensive, that there is very little profit in them. The Duchess is preferable to the Astrachan, because it averages larger in size and carries better. The Yellow Transparent is good because it can be sold earlier than either, and is very productive.

We would, on the whole, prefer Gravenstein to Wealthy, as a fall apple for profit, especially in the southern part of the province, because of its excellent quality, almost equal beauty, and it does not drop so badly. In the northern parts, of course, Wealthy is best.

There is another apple that probably excels either as an export apple, and that is Blenheim Orange. It is a fairly good bearer and a little later, so that on the whole it is a better shipper than either. Blenheims, exported this fall, have brought as high a price as Kings.

We would not advise planting largely of either Kings or Spy for profit, although when once you have the fruit, you have the most valuable varieties in our whole list. The King, however, is so unproductive that it is unprofitable, and the Spy is so long coming into bearing that you may count on at least fifteen years of waiting before it will begin to yield paying crops. The Baldwin and the Ontario are good and productive, and consequently profitable, while a small proportion of Ben Davis will always bring good money.

The only King apple known in Ontario is the King of Tompkins Co., so that the latter designation may as well be omitted.

APPLE POMACE FOR COWS.

THE experience of four years with apple pomace silage at the Vermont station, using over twenty cows, is a unit in affirming the nearly equivalent—if not, indeed, quite equivalent—feeding values of apple pomace and corn silage. No undesirable results whatsoever have followed its use. Cows continuously and heartily fed have not shrunk, but on the contrary have held up their milk flows remarkably well. Neither does the milk nor the butter seem injured in any respect. A satisfactory ration used by station has been hay, silage (one-third corn silage and two-thirds apple pomace silage by weight) and from 4 to 8 pounds grain, the latter varying according to age, stage of lactation, etc. Fifteen pounds of pomace per cow has been fed daily with entire satisfaction. Inasmuch, however, as reports of severe shrinkage occurring coincident with the use of apple pomace are current, care and watchfuluess are advised in feeding it at the outset.

Apple pomace needs no special care in ensiling. If leveled from time to time as put into the silo and left to itself uncovered and unweighed it does well.

It is trusted that this article may be of some service in calling the attention of dairymen to a waste product of much food value which, in this season of partial failure of the corn crop, ought to be utilized. Let not a pound of apple pomace go to waste this fall behind the cider mill.

THE QUESTION OF VARIETIES IN APPLES.

THIS is a very old and vexed question for the fruit grower. Time was when the variety mattered little. There were cider apples, cooking apples, and dessert apples, and their names were of little moment; for the price was the same for all. The only question was productiveness, and for this the Greening and Baldwin were the favorites with planters of thirty years ago. Then it was found that red apples sold better than green, and the favorites were Baldwin, King, and Spy; but as time passed, the Baldwin did not always meet expectations, the King was unproductive and the Spy too slow in coming into bearing; so that of late the Ben Davis has enjoyed a season of great popularity because it seemed to combine in one apple productiveness, color, and shipping qualities.

QUALITY THE LEADING FEATURE.

OF late however, the question of quality has become more and more important until we find our finest quality, colored cooking apple, the King, is bringing the very highest price in the British market, being sold sometimes as high as $7.00 a barrel, when Greenings and Baldwins are only $3.00 and $5.00. We have no doubt at all that quality will every year become more important and that, for the best results, especially in a fancy trade, high flavor will be in time a more important feature for the grower to consider, than even productiveness of tree or color of fruit. For the man who can afford to wait, and who will give the best cultivation, our Northern Spy is most to be commended, for it combines quality and beauty as no other apple on the list, while the Ben Davis is almost at the bottom of the list for quality, and should be planted sparingly.

THE BEN DAVIS.

OUR position on this question is strengthened by the present drop in demand for Ben Davis, where this apple is best known. Immense orchards of it have been planted in Illinois and great profits have been made from them; but a change has come, for consumers have tired of an apple of such poor quality and are asking for something better. In proof, we quote from "The Fruit Grower's Journal," of Cobden, Ill., as follows: "The current receipts of apples in this and other leading markets of the West at present and for some time past, show that over nine-tenths of the receipts are of the Ben Davis variety. On last Saturday four boats unloaded on our levee 10,000 barrels of apples, fully three-fourths of them from Illinois and the remainder from Missouri. A canvas of the subject among the receivers disclosed the fact that 9,500 barrels were Ben Davis, and railroad receipts show a similar record. Now this proportion is out of all reason, greatly to the detriment of the apple industry and an injury to the apple growers at large.

"For years the Ben Davis has been found a profitable apple from a commercial standpoint, and this has led to a heavy run on the nurserymen for such trees. The demand not only continued without abatement, but rapidly increased to the exclusion of all the better sorts, and we are thus confronted with the startling fact that a large number of the best varieties grown had to give way to one of the poorest in cultivation—an apple hardly fit to eat or cook, and yet every market in the entire southwest is now flooded with it. The inevitable result is before us, as the Ben Davis is now selling at figures that average only a trifle over half that the other sorts are bringing.

"A most discouraging feature is still in store for the Ben Davis, for most of the orders coming in for apples now request no more Ben Davis. Even the country merchant, who orders only five or ten barrels, almost invariably adds, 'Don't send me any Ben Davis.' Thus much lower prices for it seem assured, while the other sorts, so much

more desirable, will not suffer by the general decline because they are wanted by the trade everywhere."

THE APPLE MARKET STIFFENING.

CONSIDERING the quantity of apples in our country, it is surprising how stiff the prices hold for good stock. The lowest market is usually in November and early in December, because then everyone is shipping, and inferior stock must be sold, or it will spoil on hand. The foreign crop is very light, and not only England but all Europe is calling out for our apples. Add to this the rapid opening of Manitoba and the Northwest as a market for our fruit, and we have most encouraging prospects for the sale of our fruit products not only this year but in future years. Several fruit men have shipped their apples and Kieffer pears to Winnipeg, and report even better results than by exporting them to Great Britain. Nor is this the only new outlet. This year for the first time, a line of steamers is running between Montreal and Capetown, S. A., and the prospect is for a splendid apple market in that country, and already a shipment of boxed apples is on the way.

There are a great many of the best apples now being stored in cold storage in Montreal, and other large centres, to be placed on sale when the poor sort is disposed of. And no doubt these will bring prices that will compensate for the risk and trouble of storage, unless the unusual quantity thus stored should weigh down the market in early spring, and the early apples from Tasmania should come into close competition with our stored stock.

BOXES FOR CHOICE APPLES.

MR. J. B. THOMAS, of Covent Garden, London, England, recently paid a visit to Ontario, and was greatly taken with our beautiful apples. He writes: "Fruit buyers are clamoring for choice, gilt edge stock in boxes. But herein also mistakes will arise if care is not used to keep out all ordinary fruit. The buyers of this class require a first-class article, suitable for the English best class trade, who can rely upon the contents where the question of price is of little or no importance. For those who, unfortunately, do not control fancy fruit this year, I would say, do not be tempted to try this new method, as failure is with you before you start. Boxes should measure inside—long, 21 ins., deep, 9 ins., wide, 11 ins. Pack with very thin tissue paper.

"I believe more in small profits and quick returns, on which basis I favor the trade more before Christmas than after. I do not consider now our English markets are safe to reckon upon as being open after the second week of March, leaving the public a fortnight for consuming that supply ere the arrivals come to hand from our Southern Colonies—Australia and Tasmania."

An English correspondent of the Sun writes farther on the subject as follows:

"It is in some cases only when we come to the jobber or retailer and the middle-class consumer, that we meet the man who seriously and reasonably prefers the box. Unless, then, a shipper carefully selects his market (perhaps even his broker), when he sends a consignment of apples in boxes, he must be prepared to continue shipping, even at a loss, until by sheer merit his package forces recognition—until, in fact, the retail demand makes itself felt, and is echoed back along the line of trade, with the result that even the brokers enter into competition to secure his fruit in his package. That will take time and care, and cannot be accomplished by the shipper who sends spasmodic shipments in boxes here and there, and gives up when prices do not at once reimburse him for the extra outlay.

"Above all, whether in markets which are now favorable or adverse, nothing but prime,

sound stock (every apple perfect), should be sent in boxes; the first essential is to establish confidence in the box, which is for Canadian apples a new package, and then it will be time enough to send various grades, between which the buyers will learn to distinguish. For common stock, use the barrel."

OUR EARLY APPLE SHIPMENTS ALARM BRITISH FRUIT GROWERS.

IT is evident that our Astrachan and Duchess apples were a surprise to the British people. Such beautiful color so early in the season cannot be had in England, where the sun is so seldom seen, while our clear Canadian skies and the burning rays from old King Sol paint our Astrachans with most beautifully colored cheeks. In this connection the following extract from the journal, Green Grocery, of London, England, will be of interest:

A few weeks ago we reported the first consignment of American apples—much earlier than usual. From these early consignments it would appear that American growers intend to place their produce upon the market to compete with our earlier supplies. Now, if this is the case, home growers must wake up. Granted that we are heavily handicapped this season, everything being late owing to the weather, it is not always so. Every grower is aware of the fact, or should be, that the early produce fetches the best price, and this applies to fruit as well as vegetables. Intending apple planters must therefore plant early varieties as well as late ones.

That home growers can beat all comers at growing apples, pears, peaches, grapes, and most other fruits, can be gleaned by those who care to visit the show of British grown fruit held under the auspices of the Royal Horticultural Society at the Crystal Palace, which, by the way, takes place on Sept. 18, 19, 20, or by visiting many of the horticultural shows held in country districts. How to pack the fruit when it is grown, however, is quite another matter, and one about which growers in this country do not trouble themselves sufficiently. It is the greatest mistake possible for growers to content themselves by packing their fruit in sieves and half-sieves just because their fathers and grandfathers did so before them, and the sooner they get out of this "rut" the better. On account of the excellent grading or evenness of the foreign fruit, the method of packing, and its general appearance, the fruit in many cases is purchased in preference to English, not because it is better in quality, for often it is not, but because of the general appearance which home growers would do well to remember.

SUCCESS IN EXPORTING TENDER FRUIT.

THE writer has been forwarding a car load of apples or pears each week since early in August, beginning with the Astrachan and Duchess; continuing with Bartlett pears in September, and Gravenstein, Kings, Greenings, Baldwins and Spy in October.

These have all arrived in excellent condition in Liverpool, Manchester and Glasgow, so that the anxiety about their safe carriage seems to be entirely removed, and we may ship with more confidence.

For Astrachan and Duchess we used the Wilson cases, with fillers, which kept each apple separate from every other apple, and this helped their delivery in a safe and excellent condition. Messrs. Woodall & Co., Liverpool, wrote on receipt of them, saying, "These apples arrived in very good condition. The Astrachans were fairly well colored and nicely graded as to size."

CONFIDENCE IN CANADIAN APPLES.

"WERE you not a little sanguine in your statements about the Ontario apple crop published a few months ago?" we asked Inspector McNeill at the St. Catharines meeting. "Not at all," said he, "Granted that in Essex where they ripen a little early, or where scab or bitter rot is prevalent, that buyers are few and a large quantity of such fruit goes begging, there is a keen demand for our prime apples. Why, in many parts of Ontario to-day I know of $1.00 to $1.50 being paid for the fruit in the orchards, and in the Georgian Bay District, where apples ripen late and are known to keep well, growers will not accept these prices but have combined to store and ship during the winter. I believe there are 500,000 barrels stored in that district alone.

OUR NO. 1 OR XXX GROWING IN VALUE.

Does the Fruit Marks Act work in the interest of the apple grower?

"Certainly it does," said Mr. McNiell. "Why already our Canadian XXX apples are becoming known among English buyers, and are wanted in preference to those mark-with ten X's from countries where there is no inspection. After another summer or two we shall find retailers ordering our XXX apples, with confidence, at steady values. Here is a grand work for us inspectors, viz., to see that this grade is kept up to the mark, and this we mean to do."

A SAMPLE ACCOUNT SALES.

MANY of our readers will be interested in a sample account sales of these summer apples, so we print one in full. The cases contained about 40 pounds of fruit each, so that about four would equal a barrel, so that the highest price shown, seven shillings a case, would equal about 28 shillings, or seven dollars a barrel—a pretty fancy price for an apple that is almost unsalable in our Canadian markets. The smaller sized fruit, marked X, and only 2¼ inches in diameter, sold for from four shillings to four and nine pence, which, of course, brought down the average very much for the whole of this lot.

GLASGOW, 5th Sept., 1902.

Account sales of 303 cases apples ex "Kasbalia," sold by Thomas Russell, by order and for account of L. Woolverton, Grimsby, Ontario.

L. Woolverton.

Selected fruit,	2	cases.....			7/0	£	14	
"	"	24	"Astrachan		6/0	7	4	
Inspected	"	40	"	"	5/3	10	10	
	xxx	16	"	"	4/6	3	12	
2¾	xxx	4	"	"	5/6	1	2	
2½	xx	20	"	"	5/3	5	5	
		2	"	"	5/0		10	
	xx	16	"	"	5/9	4	12	
		25	"	"	5/6	6	17	6
		17	"	"	4/9	4		9
		58	"	"	4/6	13	1	
	x	48	"	"	4/0	9	12	
2½	x	11	"	"	4/9	2	12	3
Dessert	x	18	"	"	4/6	4	1	
	x	1	"	"			5	
Inspected	x	1	" Scotch Ben Davis			5	9	
303 cases.....								£74 4 3

CHARGES.

Freight on goods.....	£26	2	4
River and Harbour dues.....			
Master porterage.....			
Landing, selecting, coopering, catalogues, advertising, etc...	7	11	6
Cartage to warehouse, houseing and delivering.....			
Marine insurance, telegrams....		2	
Commission and guarantee	3	14	3
	37	10	1
Net proceeds.....	£36	14	2

THE EXPENSE OF PACKAGES.

There is a serious difficulty now a days with every fruit grower. Freights and commissions eat so large a hole in our proceeds, that we cannot afford to give away so large an amount in gift packages, which are never returned, but always go with the fruit. This year for example, the bill for packages at Maplehurst was about $1200, of which $600 has been for apple boxes, $400 for baskets and $200 for barrels.

The California apple box is cheaper, for being only 18 inches long instead of 22, much thinner sides are used; so that while ours costs $12.00 per 100, theirs can be made for about $8.00.

ASTRACHAN IN GLASGOW MARKET.

OUR worthy exchange, the Sun, having made some remarks rather discouraging about the export of summer apples, Mr. W. A. McKinnon, who is in Manchester, representing the Fruit Division of the Dominion Dept. of Agriculture, writes in reply as follows:

"I see that your columns have contained expressions of doubt as to the 'holding up' quality of Red Astrachan apples, so I am sure you will be glad to note the following facts:

"One Wilson case of Astrachans, which arrived in Glasgow September 4th, was sent at once to Liverpool, and kept at a temperature of 38 degrees for two weeks; one tray was then removed, and kept in a warm house for a week, without showing any serious deterioration. The other trays

were 75 per cent. sound after another two weeks in storage. A similar tray was kept in Glasgow in a room which averaged 60 to 65 degrees in daytime, for six weeks, when half a dozen apples were still perfectly sound and good. Some had been eaten, and of those which showed decay all had been bruised or defective at the spot where such decay had started. It would seem therefore that selected Astrachans, if properly shipped, have plenty of 'life' in them after arrival here to answer the commercial requirements of an early apple.

"Glasgow is doing remarkably well with box fruit, the trade preferring as little packing material as possible with the fruit, and asking for carriage in ventilated packages and compartments, except where cold storage is absolutely essential.

DUCHESS PEARS.

"Some Duchess pears from Burlington are pronounced the finest in flavor and appearance ever seen in Glasgow by one of the best retailers here. I examined and sampled them along with some French Duchess of equal size, and there was simply no comparison between them, the Canadian fruit being infinitely superior. The Grimsby ventilated half-case (a variation of the Californian), with wrapped fruit and very little excelsior packing, if any, is undoubtedly the favorite package with the trade here."

SPOTTED GREENINGS NOT WANTED IN GREAT BRITAIN.

IN a letter to Mr. A. McNeill, Mr. McKinnon says: "I shall, at the risk of wearying you, state once more that this is no place for poor apples or pears. There are tons of trashy fruit in the country, and they find their level in the poorest class in shops, some being really too miserable to sell for costers' barrows. It is simply absurd for shippers to forward poor fruit, paying as much for all incidental expenses (except, alas, for commission), as they do for good merchantable stock. I wrote you to this effect from Paris early in September, and have no doubt you passed the unheeded warning on to the public. Yet to-day's lot, ex-Numidian, showed up in painful contrast to similar varieties from Boston. Greenings were especially poor, and have suffered greatly from 'sweat spots,' particularly in the heart of the barrel. Buyers summarize thus: 'Canadian fruit very poor this year, but packing marvellously improved.' There are exceptions, but two Irish buyers to-day said they could at least count on the bulk bearing definite relation to the face, although they knew nothing of the Fruit Marks Act."

And to the Sun he writes: "Lots of poor stuff," Mr. McKinnon says, "has come forward to the slaughter, and some have even taken the trouble to pack this poor stuff in boxes and Wilson cases for shipment."

And the editor sensibly remarks: "It is surely foolish enough to send poor fruit to such a distant market, in any form of package, but it is scarcely possible to conceive of the folly shown in packing this poor stuff in expensive packages. It is possible, however, that the shippers did not know just how poor the quality of stuff was that they have sent over. There were shown at the meeting of the Entomological Society at London last week some Greenings which had, by accident, been delayed at a Canadian port on the way to the British market. These were delayed for about the time it would have taken them to reach the place of sale in Britain. The apples had on them small black marks, caused by fungus disease, and the rot which looked insignificant at the time of shipping had, while the fruit was being delayed in transit, developed until the whole thing was covered with black rot. Fruit which is at all badly spotted should not under any consideration be sent to the Old Country market.

FIG. 2480. BITTER ROT.

BITTER ROT OF THE APPLE.

THIS disease is very destructive to the apple, south of the 40th parallel, but we had hoped that in latitude 43 to 45 would escape it entirely. We once thought the same of the San Jose Scale, but were quite mistaken, for it bears the cold only too well, and now we find many Ontario orchards quite seriously affected with Bitter Rot of the apple. It is identified, says Professor Burril, in growing apples by minute brown brown specks which enlarge so as to make each a conspicuous dark colored circular spot, which, while preserving its circular form and maintaining a sharply defined border, gradually extends to become soft; but is soon depressed, or somewhat sunken, while the skin assumes a leathery appearance. The outer portion of the spot remains smooth and polished, while the central area loses its lustre and becomes roughened by the formation of a multitude of minute pustles arranged in irregular, concentric circles. When the atmosphere is not too dry, each of these little pustles open and there exudes in microscopic masses, or columns, a waxy substance, which is at first pale pink in color. then pale dull red, or, at length, grayish when long exposed to the sun. The spot ultimately, becomes shriveled in appearance, tough in texture, and very dark, approaching black in color. When there are, to begin with, several spots, they run together but commonly preserve some indication of the original centers of each in the general area of infection.

The diseased apple finally becomes dark brown throughout, and shriveled into a dry hard, and much wrinkled mass, called a "mummy." This may remain firmly attached to its twig on the tree for a year or more, but commonly falls to the ground before the drying process is entirely completed.

In our orchard at Maplehurst we have noticed this disease especially troublesome in one block of trees on the lake shore, and it is apparently inclined to spread. In Illinois the disease has become most alarming, and, in 1900, the loss in four counties was estimated to be $1500,000. The best remedy is faithful spraying with Bordeaux mixture, at frequent intervals.

FRUIT TRANSPORTATION IN NOVA SCOTIA.

OUR friends in Nova Scotia have had much to complain of in the transportation of their fruit, but Mr. Ralph S. Eaton writes that now, by contract with the Furness Witthy Company their Deputy Minister of Trade and Commerce has secured nearly everything asked for. The following is a copy of the letter reviewed from that official by Mr. Eaton :

"I think all of the clauses which were asked to be inserted on behalf of the fruit growers last winter are contained in the contract and are in effect as follows :

"It provides that the steamer shall be fitted with suitable accommodation for carrying perishable cargo such as apples or other fruit, dairy produce and other products, without deterioration. with holds and 'tween decks provided with a thorough system of ventilation by means of forced circulation of fresh air by electric or steam fans in such manner as to secure a uniform cool temperature ; the intakes for fresh air to be protected by contrivances for that purpose similar to the Gibbs Steamship Ventilators so as to operate in all weathers without permitting water, spray, or other dampness being taken into any place where cargo is carried, and that such ventilating appliances shall be operated at all times when cargo is on board; that at least one of the steamers employed shall be equipped with refrigerating plant for the forced circulation of cool air through places where tender or early varieties of apples are carried; the space to be so cooled to be from 25,000 to 40,000 feet; tempera-

ture to be maintained at between 50 and 55 degrees Fahrenheit; that the steamer while so employed shall not carry in any hold or between any decks more than five tiers of barrels of apples or other fruit except they be stowed in such manner and in such tonnage as will relieve any tier from the weight of more than four other tiers; that the steamers when carrying fruit shall be run at an average speed of not less than twelve knots per hour."

A CURIOUS APPLE TREE.

WE take the following from a recent issue of the Orillia Packet: "A decided curiosity in fruit was left at the Packet office on Saturday by Mrs. Silas Prophet, of Atherley, in the form of a stem from an apple tree, bearing from one bud a fair size apple, a crab apple, and a pear. The freak grew on a tree in the orchard of Messrs. Gaddey Bros. The tree has produced a number of the oddities, but most of them had been eaten by the children. The pear is well formed, but otherwise it resembles the apple in appearance, having the same coloring and markings. Mr. Wellington Fisher, to whom the Packet showed the odd combination, thought it most remarkable and worth preserving."

FIG. 2481. PEAR, APPLE AND CRAB ON ONE BRANCH. A CURIOSITY.

We show an engraving of this curiosity, which will give our readers a correct idea of form, which is certaingly a monstrosity. It has no other value, however, for the flesh of apple, pear and crab are all apple.

A LANDSCAPE GARDENER'S CRITICISMS.

WE take it as a compliment that such a man as W. H. Manning, so long Secretary of the American Park and Out-Door Association, and a landscape architect, should find interest in our journal. In a recent letter he writes:

The "Flower Garden and Lawn" always has something of interest in it. I see this time that you have the garden of Mr. R. S. Anderson, where I should judge some man who likes freaky stone structures has been in charge. Certainly the effect is not a good one from a landscape architect's point of view, whose purpose it is to make an attractive picture in which no one object will be unduly obtrusive. The little glimpse of a street car used as a summer-house on Main street is very interesting and rather more attractive. The garden at Bowbrook is certainly an attractive one, although here I should think there had been an attempt to introduce too many curious conceits in the way of artistic structures. Mr. J. M. Hall's garden at Hamilton interested me rather more than the others in a way, because it is evidently not the work of a gardener but that of a flower lover who has a more definite purpose in view than the display of plants, pots, rockeries, and the like. This little place will be a gem in its way. Notice, if you will, how well the fence is being covered, and how soon the existing growth will so completely cover it that it will merge into the distant landscape. I have written Mr. Hall, asking him if he can let me have a copy of the photograph that is reproduced in the Horticulturist.

CHEAPEST AND MOST EFFECTIVE SPRAY

A PUBLIC DEMONSTRATION IN MR. ARCHIBALD'S ORCHARD NEAR ST. CATHARINES—A THRESHING ENGINE UTILIZED TO COOK THE LIME AND SULPHUR WASH—INSPECTOR FISHER'S PERSEVERANCE BRINGS SUCCESS.

FIG. 2482. ORCHARD SPRAYED WITH LIME AND SULPHUR MIXTURE.

THE Hon. John Dryden has recently received the report of the San Jose Scale Commission on Mr. Geo. E. Fisher's work as inspector, and these gentlemen have expressed themselves fully satisfied with the results attained thus far.

For fungous diseases of fruit trees of all kinds, and for scale insects, a winter or spring application of the lime and sulphur wash was found to be the best and cheapest remedy, and this in the opinion of Mr. Fisher, might be profitably applied to one's whole orchard whether affected by scale or not, because it cleansed the bark and made the tree more vigorous.

On Wednesday, the 19th, an orchard demonstration meeting was held on the farm of Mr. Archibald, near St. Catharines, at which a large number of fruit growers were present, and in addition, as representatives of the Government, Mr. G. C. Creelman, Secretary of our Association, Mr. Alexander tor, and Mr. L. Woolverton, Secretary of the Ontario Fruit Experiment Stations.

The great objection so far offered to the use of this remedy was the trouble of preparation, but here we found Mr. Fisher preparing it in a wholesale way, and at a cost of only about 1¼ cent a gallon, or about ⅛ the cost of whale oil soap. Twelve kerosene barrels were arranged in a row, as shown in our engraving, and the contents kept boiling by the steam generated in the threshing machine boiler at the end, and conducted to each barrel by gas piping. The formula used was one pound of lime to one half pound of sulphur in one gallon of water, all boiled at least two hours, and applied hot. If allowed to cool before applying, a chemical change takes place which renders it less effective. After Mr. Fisher had explained the process of preparation, the crowd retired to the orchard and examined trees McNeill, of Ottawa, Dominion Fruit Inspec-

FIG. 2483. BOILING LIME AND SULPHUR AT MCCARDLE'S.

treated last spring with this mixture, and others treated with whale oil soap ; and while none of the trees were completely cleansed of scale the former were in better condition than the latter.

Mr. McNeill suggested the use of the small agricultural boiler for individual farmers who could not co-operate ; to this Mr. Fisher assented, saying it could also be done in a still smaller way in iron pots over an out-door fire, but of course would be much slower and more expensive.

When should it be applied? Some one asked.

In early spring, said Mr. Fisher, usually in April. It only needs to be applied once a year, and of course it is not a suitable spray for the foliage. If a summer remedy is needed, an emulsion of crude petroleum and water is recommended instead.

MEN WHO HAVE SUCCEEDED

JOHN CLAUDIUS LOUDON — THE FATHER OF HORTICULTURAL JOURNALISM—LANDSCAPE GARDENER — TRAVELER — JOURNALIST — AUTHOR.

1782—John Claudius Loudon—1843.

THE old Latin Proverb, "*Labor omnia vincit,*" has been often quoted and perhaps in no case is it more clearly demonstrated than in the life of John Claudius Loudon. There is no name more prominent in English horticultural literature than his, but his fame was earned by the most intense study and application. Now-a-days it seems the fashion among many students to affect to despise hard study, and to impress their mates with how much they know with the least application. Success is not so attained; it is only secured by hard persevering labor.

Born in 1782, the son of a farmer, he was early encouraged in his tastes for gardening by being apprenticed to a Mr. Dickson, Nurseryman and "Planter" at Leith Walk, Edinburgh. The time was most opportune, for like the swinging of a pendulum, the ideals of garden design were just ending a great revolution, and turning from the extreme of the formal or architectural style, which had prevailed in England during the early part of the 18th Century, to the landscape gardening style, which gave more freedom of conception, while adapting nature's best examples to the park and garden.

Mr. Loudon's work as a draughtsman of estate and garden plans, brought him into acquaintance with men of refinement and education, such as Sir Joseph Banks, of

London, and other men of eminence, from whom no doubt he gathered much that inspired his pen in later years. His first published book was "Observations on the Formation and Management of Useful and Ornamental Plantations, and on the Theory and Practice of Landscape Gardening" and this appeared in 1804, when he was only twenty-one years of age. How many young men of to-day have given the world such a work at such an age!

Previous to this he had contributed an article to "The Literary Journal," criticising the use of Scotch Pine and sombre Yew trees in the parks and gardens of London as giving altogether too gloomy a character to the landscape; and also advising the planting of the Thames embankment and Picadilly with those strong fine Buttonwood trees, which to-day are so essential to the attractiveness of those sections of the great metropolis.

When not engaged in landscape designs, Mr. Loudon wasted none of his precious time; he would either be engaged in writing some article for a journal, or some book for publication; or he would be reading Greek or Latin authors; or he would give attention to his favorite pastime the practice of painting, in which he was successful enough to have one or two of his pictures hung in the Royal Academy.

In 1813 Mr. Loudon visited Gottenburgh in Sweden, to see Linnaeus, the great father of Botany; thence he journeyed on to Berlin, to Riga and St. Petersburgh, "proceeding," says the Journal of Horticulture, "he wended his way to Moscow, on which journey he got fixed in a snow storm. His horses were unable to extricate his vehicle, and judge of his consternation when he saw his postillions unyoke their horses and ride off. He remonstrated; he pleaded that he would surely fall a prey to the roving wolves, or, if he escaped them the awful cold would overcome him. He was calmly told to go inside his vehicle and securely fasten the windows, upon which no harm need be feared; and the drivers added, as they rode off, that they would be back early the next morning with extra horses. And so they left Mr. Loudon alone on a Russian waste, with a snowstorm in its fury around him and the howls of the wild wolves borne in ghoulish discord upon the screaming winds. Well might he cower and dread the worst; it would be a test to the nerves of even the Great Duke, and the memory of one moment in that awful night when a pack of wolves crossed the road where he was held was never forgotten during the remainder of his life. Returning via Prague, Dresden, Leipsic, Magdeburgh and Hamburg, the itinerant again landed in England on the 27th of September, 1814." During this long and interesting route of travel he had sketched views of every place of any gardening merit, and had, of course, made copious notes, which are found in his "Encyclopædia of Gardening." He had made himself known to most of the leading scientists, and had been elected Member of the Imperial Society of Moscow, the Natural History Society of Berlin, the Royal Economical Society of Potsdam, and many others.

The loss of his fortune, through an insecure investment, added necessity to love of work as an inspiration to his zeal, and in addition to several books which he was writing, he established in 1826 "Loudon's Gardeners' Magazine," which was continued until his death in 1843.

He was married at the age of forty-seven to Jane Webb, herself an authoress, and the two were most congenial and devoted to each other; and to her we owe an excellent memoir of his life written for his last work, "Instruction for Young Gardeners," which was not quite finished at the time of his sudden death.

Perhaps his greatest work was the "Arboretum et Fruticetum Britannicum," which

is still the best illustrated work of its kind, and considered indispensable by students of botany. It was five years in preparation, viz., from 1833 to 1838, and in its accomplishment he spared neither labor nor money. He resolved that all drawings should be made from nature, and employed seven artists constantly at this work, accompanying them during the day, and working on the literary part at night, even until the small hours of the morning. No wonder he was deeply in debt when it was all finished, to artists, printer, stationer and engraver; and the amount would have staggered any ordinary man, for on counting up the cost he found it no less then $40,000, and to the end of his life he was engaged in the almost superhuman effort of clearing off this mighty debt.

In speaking of his illness Mrs. Loudon writes: "I feel that I cannot continue these melancholy details; it is sufficient to say that though his body became weaker every moment, his mind retained all its vigor to the last, and that he died standing on his feet. Fortunately, I perceived a change taking place in his countenance, and I had just time to clasp my arms around him and save him from falling, when his head sank on my shoulders, and he was no more."

And Mr. Wm. Paul, the great nurseryman of Waltham Cross, who knew him personally, says of him, "Loudon was the greatest Horticulturist England has ever known."

BY-PRODUCTS OF APPLES.

The Vermont Experiment Station has been investigating various methods of utilizing the by-products of the apple. Cider-making, the station declares to be unprofitable if carried on by the use of hand-grinders and presses. On an average it required one bushel of apples to make two gallons of cider, while with modern machinery and an eight-horse power gasoline engine a bushel of apples would make four gallons of cider at a cost of 2.3 cents a gallon. They found making apple jelly from cider to be profitable. A hundred pounds or eleven gallons of cider would make twenty-five pounds of pure jelly, at a cost of about one cent a pound for the cider used, that is, twenty-five cents worth of cider for twenty-five pounds of jelly. For table use one pound of sugar for each five pounds of jelly, and the material costs about three cents per pound of the finished jelly. Marmalade was made by cooking the apples in cider, and eighty pounds of fresh fruit, eight gallons of fresh cider, and thirty-five pounds of sugar, making 116 pounds of marmalade, which, with the apples at twenty-five cents a bushel and cider at 2.3 cents a gallon, cost less than two cents a pound for materials. When the fruit was pared and cored by hand, it lost over twenty-five per cent. in weight, but when put in whole, and put through a colander after it was cooked, it lost but five per cent. In making vinegar, they found that the common method of allowing the cider to ferment and sour at will was unprofitable. To add vinegar mother and cultures of acetic acid and controlling the temperature, good vinegar was made, but the process was slow and wasteful. To mix equal parts of fermented cider and old vinegar changed the whole to good vinegar quickly, but this requires keeping on hand a large stock of old vinegar.

FRUIT TREES—PRINCIPLES REGULATING GROWTH.

IN studying methods of manuring orchards, it must be admitted that the general principles which apply to fruits apply quite as well to vegetables ; that is, the essential constituents of manures must be the same. A fruit tree will not make normal growth in a soil destitute of nitrogen. That nitrogen encourages leaf-growth is a recognized fact, and since trees grow by means of leaf and root, its presence is required in the soil in order to promote the growth and extend the life of the tree. It is very evident, too, that potash is an essential constituent in the growth of fruits, not only because it constitutes a large proportion of the ash of the wood of the apple, pear, cherry and plum, and more than 50 per cent. of the ash of fruit, but because it forms the base of the well-known fruit acids, and in order to nourish a tree properly as well as to ensure proper ripening, phosphoric acid is also very necessary. It is also a matter of common observation that, in the production of stone fruits particularly, lime is an important constituent. Its function seems to be to strengthen the stems and woody portion of the trees, to shorten the period of growth, and to hasten the time of ripening. Fruit trees growing on soils rich in lime usually show a stocky, steady, vigorous growth, and the fruit ripens well ; while these on soils which contain but little lime, particularly the clays, appear to have an extended period of growth, the result of which is that the wood does not mature and the fruit does not ripen properly.

Nitrogen is particularly efficacious in promoting growth. In fact, the amount of growth and the color of foliage are reliable guides for the application of nitrogen. When mature or bearing trees make a foot or more of growth upon all shoots, and when the leaves are of good size and dark green colored, the soil probably has enough nitrogen. A free application to such soils of the element nitrogen might do more harm than good in promoting growth at the expense of fruit.

TILLAGE AN ADVANTAGE.

In general it is better to supply nitrogen by good cultivation, which assists nitrification in the soil. If the trees do not make sufficient growth and are yellowish in foliage, good cultivation begun early and repeated very frequently in connection with the use of potash and phosphoric acid, will usually correct it.

Potash is generally the most important ingredient to be applied directly to orchards, particularly after the trees have reached mature age. The store of available potash in the soil is much increased by the thorough tillage which has already been recommended, but in fruit-bearing orchards potash should also be supplied in some commercial form, as sulphate or muriate of potash.

In general phosphoric acid is probably less important in fruit production than potash, although it throws the tree into fruit quicker, and has a most beneficial influence on the growth of the wood and leaves. The best form in which it may be applied to trees is probably by bonedust, and half and quarter-inch bones. The coarser the bones the heavier should the dressing be.

The amounts of manure to be applied depend upon the character of the soils, the kind of fruit, and the age and vigor of the trees.—*Gardeners' Chronicle.*

MARITIME FRUIT GROWING

PRINCE EDWARD ISLAND RAPIDLY COMING TO THE FRONT AS AN APPLE COUNTRY— NOTES FROM OUR SPECIAL CORRESPONDENT.

WHILE the crop of apples has been short in Nova Scotia and the luscious Gravenstein is very little in evidence this fall, Prince Edward Island, under its excellent F. G. A. organization, presided over by our friend Rev. Father Burke, seems to be rapidly coming to the front as a fruit-growing province. In apples, plums and pears she has made wonderful and permanent progress; and now it appears there is ample evidence that she can grow peaches. A splendid specimen of the Elberta species three years from planting was put on exhibition recently at Charlottetown by Mr. Murchison of Bonshaw. Islanders are pleased with themselves.

The cold and wet weather of spring played great havoc with the fruit prospects of Nova Scotia. In blossoming time there was very damp weather, and the pollen was not as a consequence distributed. The Gravenstein is almost a complete blank, despite a perfect profusion of bloom. Later bloomers seem to have done better. Baldwins and Ribstons are a good catch and the quarter crop of the province is made up of these and some early varieties. Commercially, Nova Scotia is not likely to compete very largely in the foreign or domestic markets this year.

New Brunswick never attempted, to any extent, fruit-growing. Not that apples cannot be grown there successfully, but somehow or other the spirit of organization, which does all things now-a-days, has not invaded her. She has had nurseries, has made her own of the Duchess, for example, which is everywhere grown in the Maritime Provinces under the name of "New Brunswick," but has not induced the people in any numbers to take to orcharding.

Little Prince Edward Island, garden from end to end, shut out from the possibility of manufacturing by its insular position, has been casting about to develop all its agricultural possibilities. Fruit growing is among them decidedly; and of late it has made gigantic strides there. The Federal Government has given the F. G. A. two skilled instructors, who have travelled over the Island from end to end this season and held demonstration classes in all the wide range of horticultural work. They have got into as many individual orchards as time would permit, and proved the wisdom of Father Burke's contention at Cobourg last year, that missionary work in horticulture is best done in the orchards of the class of farmers needing instruction of that kind. A small province like P. E. I. lends itself admirably to this work.

The Exhibitions have been dissappointing in the fruit-departments this year at Halifax and St. John, while Charlottetown's display has never been excelled in the provinces. The Maritime Farmer, of Sussex, N. B., thus alludes to this feature:

"At this point (the fruit stands) came a revelation of the show and it is apparent that in the future, and in the very near future at that, Prince Edward Island must be reckoned with in the fruit markets of our country. It is not alone the question of quality but quantity as well." The writer, Editor Ross, himself an Ontarian, and well qualified to judge, reviews lucidly the large

lists of kinds on exhibition and praises the men who are rapidly bringing the little Island to the front as a fruit country.

"There was one group" he says, "which could always be found gathered around these tables in the centre of the building. It consisted of Rev. Father Burke, the aggressive pesident of their Association, beaming on everyone as the surprise of the visitors was voiced; Secretary Dewar; Inspectors Richard Burke and G. H. Vroom, who have this summer been strong in preaching the gospel of good orcharding on the Island; Senator Ferguson; and John Robertson, of Inkerman, the largest orchardist of the province, we are told. These men have a right to be enthusiastic. The possibilities of orcharding there are beginning to reveal themselves and the future is one of great promise. Father Burke informed us that next season will witness a readjustment of their prize list and a weeding out therefrom of all but the commercial varieties. He argues, and is supported by his executive, in favor of an exhibition work which shall not only be illustrative but educative in that it will endeavor to discourage orcharding which is other than of the dollars and cents description. This is as it should be."

Some who go to apple shows to see all the different varieties on exhibition may not be over pleased with this resolve of the practical officials of the F. G. A., but, on the whole, its wisdom will commend it to all fruitmen.

The prize list appears to have comprehended about all the commercial varieties and an exhaustive list of others. It will be interesting to see what those gentlemen discard as a means of comparison with their own tastes and necessities in this important matter. To the surprise of many the Island beat Nova Scotia in their own Gravenstein. And she may excel us in growing Ontario apples.

Already P. E. I. has sent forward a considerable shipment of fruit, apples principally, to Great Britain in the Manchester Trader. She has many more to send and may be now regarded as established in the business. Large orchards of a single kind are coming on and soon it will be a pleasure for the buyer to extend his operations to "The Garden of the Gulf." We hope the good name it enjoys for honest packing may never be impaired and that the commendable efforts of its progressive F. G. A. officials may continne to bear good fruit. A large commercial concern for preserving and canning is now on its feet on the Island, and must assist those patriotic men to the immediate expansion of the fruit industry.

RECENT RESEARCHES IN THE ORIGIN OF SPECIES.

SINCE Darwin advanced his theory of the origin of all species of plants by natural selection, scientists have, to a great extent, spent their time in speculating as to the various factors in evolution and the methods of inheritance and descent. A few, however, have depended largely upon the result of direct experiment with the plants and animals themselves. Instead of looking around for a ready answer in nature to every question they find in their researches, these men take the living things and, by years of experimental research with them, secure the desired information. Among such men are Dr. White, of the Smithsonian Institution, Washington, and Prof. Hugo de Vries, Director of the Amsterdam Botanical Garden. As a result of his labors, de Vries now gives to the world a new theory, that ot the origin of species by imitation or sudden change.

In support of this theory, Dr. White, in

an October issue of *The Independent*, tells of a rather remarkable experience with tomatoes, an experience which he thinks goes to show conclusively that varieties can originate by sudden change or mutation in the seed plants. He first points out the botanical classification of the tomato, and divides the group into three forms, known as *Lycopersicum esculentum*, *L. solanopsis*, and *L. Latifoliatum*, respectively. Each one of these includes some of the large number of varieties catalogued by our seedsmen; yet each form is readily distinguished by differences of flower and leaf, and of general habit and relative size of the plants. *L. latifoliatum* is represented in our Canadian catalogues by the variety Mikado or Turner's Hybrid, while a good example of *L. esculentum* is the Acme.

Now Dr. White's experience was as follows: In 1898 he obtained some seed of the Acme, raised the plants and set out his small plot of about thirty plants. These grew and fruited, and were typical of the variety in every way. Seed was saved from some of the best fruits and plants raised therefrom in the spring of 1899, with the expectation of obtaining a crop of Acme from them. Dr. White thus describes the result: "The seeds germinated promptly and the young plants grew healthfully, but from their first appearance above ground they showed a marked difference from the Acme plants from which they sprang. When they reached the fruiting stage they had all developed into typical representatives of *Leycopersicum solanopsis*. To put the matter in the strongest light, I repeat that the whole crop changed uniformly and completely from *L. esculentum* to *L. solanopsis*, the change having taken place in the germinating seeds, which I planted in the spring of 1899. Not only was there complete plant mutation, but the fruit differed in flavor, consistence and shade of color from that of the parent Acme plants, and it also ripened earlier than did the latter.

Unfortunately, Dr. White did not save any seed from this new type. In 1900, however, he replanted with Acme, to see if the same result would follow. The seed was obtained from another source, a hundred miles from Washington, and the plants raised therefrom came true to type. Special care was exercised in the selection of seed from typical plants both as regards plant and fruit. This seed, sown in 1901, produced plants with the same characteristics as those of 1899. Exactly the same change had occurred in both these years.

Both White and De Vries prove conclusively that the changes in the plants under their observation were not the result of hybridization, as many would contend. If not hybridization, then what? The new plant form appeared suddenly with all its characteristics in full perfection. It was perfect upon its first appearance, and constant in its progeny. Such being the case, then varieties may originate by sudden change or mutation. As De Vries says: "Varieties may originate by one or two other methods, yet some undoubtedly did arise by mutation or abrupt change, an instance which came under my observation."

This theory is not in any way opposed to that of evolution, but simply furnishes a concrete example of the way evolution takes place. It appears to those who doubted the statements of many scientists that life has existed on the earth for a period of time almost beyond human comprehension. So, too, it allows of those who still believe in the special creation of species a right to a place among rational scientists. De Vries thinks it is possible to study the production of such new forms as observed by White and others, and to ascertain the laws which govern them. Then, with a thorough knowledge of these laws and the causes of mutation, one might even aspire to attain a method of producing the new forms at will.

P. W. H.

THE CEDARS OF LAKE COUCHICHING

BY

T. H. RACE

FIG. 2485. CEDARS AT THE HERMITAGE, ORILLIA.

THE photo engravings which illustrate this article will give one but a poor idea of the beauty of the trees they are intended to represent. What is there in tree or shrub in all America more beautiful than the common cedar, or American Arbor Vitæ? The cedars of Lebanon were noted for their size; those of America for their natural and artistic beauty, but if left to nature these will attain a symmetry in form, and a compactness in growth unequalled by any other evergreen. In a hedge, or clipped into any of the grotesque shapes in which they are often seen, they will stand more abuse and live longer than any evergreen we have for a similar purpose. The objection is that they are too slow in growth, and in place of them the Norway Spruce is too often chosen in preference. We admit the objection, but it sometimes pays to wait.

If left to nature, the spruce for the park or lawn will grow more rapidly, but it will be loose, open and sprawling, and in a few years become more or less disfigured and dirty from the dead and decaying inner branches. The cedar, on the contrary, will grow compact, faultless in shape and will always be clean. If used for a hedge, or trimmed into some unartistic shape as is often the case, the cedar will endure for years and revive its freshness as if ever young, while the spruce will after a few years begin to show its inner dead branches, as mentioned above, and from that its beauty is always more or less marred.

My natural admiration for our native cedar was greatly strengthened by a recent visit to Orillia, and to the home of our Director, Mr. C. L. Stephens, on one of the points projecting into Lake Couchiching. More beautiful cedars, left entirely to nature, I never saw than those growing irregularly on the somewhat extensive grounds about this home, known as "The Hermitage." The views given show the pathway through

FIG. 2486. AT THE HERMITAGE.

the cedars leading to the home from two different directions. The trees are a uniform height of about thirty feet, and they form a natural grove several acres in extent, through which winding paths run. Through one of these views may be seen a large spreading beech, which stands almost in front of the house and on the edge of the tennis lawn, and under its spreading branches, it is said, one may enjoy almost a cold storage temperature the hottest day in summer, with the healthful aroma of the cedar all about.

Every defect in nature, it is said, has its compensations. A defective summer will sometimes lend an additional charm to the autumn. These cedars furnish an example. Their deep green and autumn freshness was never before so marked. The continuous rains of the past summer which gave our director, Mr. Stephens, cause to deplore the spotting of his apple crop and the unripening of his grapes, gives him compensation in the added freshness of his cedars, and the additional charm they impart to his whole surroundings. Nature has done much for Orillia in the way of scenic beauty and natural forest growth; and its enterprising citizens are with admirable taste adding to its attractions by a judicious system of tree planting. But nothing within the environments attracted my attention so much as its handsome cedars, growing promiscuously everywhere, but nowhere to such perfection and beauty as on the natural grounds about "The Hermitage." I question if the Crimson Rambler Roses, referred to in the September number, could possess a greater charm for the true lover of nature than those cedars, arrayed, as I saw them, in their autumn dress of living green.

FRUIT AT SAULT STE. MARIE

A FEW FACTS CONCERNING FRUIT GROWING IN THE NORTH, TAKEN BY AN INTERESTED OBSERVER AT THE FALL SHOW, SAULT STE. MARIE, OCTOBER 6TH.

THE first thing that takes the eye of a stranger on approaching the tables —that is one who is somewhat familiar with fruit exhibits in Eastern Ontario— is the blaze of color. He will say to himself, these apples are much higher colored than ours are. Then the very large will likely catch the eye. These will be found to be Alexanders, an apple particularly adapted to northern climates, and grown here without that objectionable coarseness of flesh common in what is usually considered more favorable localities. Gideon, an apple not much in favor in the east, is a valuable and reliable apple here; tree hardy, fruit not subject to decay at the core as when grown further south. Charlemoff, our best early fall apple, is past its season at this date, but is perhaps the handsomest apple we grow; its only fault is shortness of season. It is better every way than the Yellow Transparent, the trunk of which, notwithstanding its reputed hardiness, is liable to sunscald. Duchess also is a superior apple as grown in the north. In speaking of this apple, an interesting discussion took place among the exhibitors as to whether there were two distinct varieties of this fruit, one with color, more solid, and which will keep two weeks longer than the other, the color of which is more approaching the St. Lawrence. This apple has been more exten-

sively planted than any other, has proved itself the hardiest of all apples, and brought in more money than any other. At this date it is at its best for eating from hand, but for some reason it is keeping longer than usual this year. It is usually past its best by Oct. 1st. Yellow Transparent makes a good appearance on the tables, but is past its season now. Many other fall varieties are shown, but those mentioned are most in evidence.

In winter apples, and we call it a winter apple here, notwithstanding the decision of the Horticultural Society, Wealthy still stands ahead of all others. It has perhaps the fewest faults of any winter apple we have. It is not quite perfect, has a habit of growing its fruit out at the end of its long, slender branches, and we want an apple of just as good quality and productiveness that will keep just a little longer. Wallbridge is the most highly colored apple we have, a long keeper, but that is about all that can be said in its favor, except that it is quite hardy. Scott's Winter, a pretty little apple, is too small; a great many go to a barrel. Golden Russett is larger, and will average nearly as much to the tree as the former, and is more durable. Ben Davis, as grown here, has nothing to recommend it. The appearance is enough to give one a fit of indigestion. I do not think it will ever amount to anything here. Tallman Sweet is coming to the front, and in its own place promises well. Longfield is being extensively planted, but has little to recommend it except its extreme productiveness and early bearing, but perhaps more of this variety is being shown than any other. What your late president, Mr. Orr, has been pleased to name, Algoma Seedling, has taken first prize for the last three years shown as any other winter variety not specified, is certainly a large and exceptionally fine apple, keeps until April, quality the best, a regular and heavy bearer, with dark green foliage, its fruit being well distributed along the branches. I will see that a few specimens are forwarded to Walkerton in time for your meeting. If it is a seedling, it should be propagated, for we have no apple that so completely fills the bill for winter. If want of color is not against it, it is absolutely faultless. Some of your best apples are conspicuous by their absence here. Spy, King and Baldwin, I am pretty safe to say, have never produced a single specimen in this part of Algoma, at least I have never seen any and do not know of anyone who has. The dead tree with the tag attached is all that remains of the many dollars that have been sent east for them. Taken altogether, the apple exhibit at Sault. Ste. Marie would compare favorably with any of greater size along the lower lakes. The collections, of which there were several, numbered about thirty varieties, and not a scaly apple to be seen, our summer, from June, being very dry and unfavorable for the growth of scab.

Pears I may dispose of at once by saying we were not in it up to this time ; failure has been the result of our efforts. A few specimens were on exhibition, but I do not think you would call them XX ; still, we hope to do better in the future.

Plums were very good, and although rather past the season, some remarkably good fruit was shown, among which I notice Reine Claude and several of the Japans ; in fact the majority were Burbank and Ogon. Several Americans were noticeable, but their appearances were against them.

Of grapes there was a wonderfully good display, not at all to compare with anything south of us, but enough to show that it is quite possible to ripen anything not later than Concord around Sault Ste. Marie.

Crab apples, although not a very desirable fruit to grow in Eastern Ontario, are valuable here. If I may judge from the few barrels sent up to Sault Ste. Marie from the east, the sooner you quit trying to grow

them the better it will be for your own credit. I think the plates of Hyslop and Martha shown here would be rather a revelation to you. On making a careful examination of all fruit shown, I failed to see any vestage of scab or worm.

Algoma Fruit Station, C. YOUNG.
St. Joseph's Island.

CARE OF BLACK RASPBERRIES

A BERRY CANE WILL BEAR ONLY ONCE.

THE crop of black raspberries depends on the new growth made this year. It is a surprising fact—one hardly to be believed, but true,—that not one man in five among farmers knows that a berry cane only bears once. I have seen men, otherwise quite intelligent, trimming up the old canes, thinking to get a second crop. Even growers of small fruits only half realize the fact, and leave the canes to grow as they will during the summer without pruning or any care.

The long, overhanging cane sways in the wind and breaks beneath the snow, the grower saying: "I guess we will have to stake and wire them," which is a needless expense if they are properly cared for. Some experiment stations claim to find a diminished vigor where summer pruning is practiced. So the tendency seems to be toward "the survival of the fittest" plan and a "go as you please" policy.

After growing raspberries for twenty years with success, and picking seven consecutive good crops from one field. I do not take any stock in these mentioned plans. I think it possible to keep a field in good heart and make it bear fine crops for many years by careful attention to the growing wood, to the diseased plants, and with plenty of manure. A single handful of high-grade fertilizer per hill only takes two or three hundred pounds, and if applied around the hill in spring is paid for in berries; but I apply it for the promotion of new growth. It's not too late now. Plowing the soil toward the plants and then harrowing it down level kills weeds and hastens growth. Pinching off the soft green end stops the upward tendency and causes the side buds to start. A pinched back, tree shaped, low bush is well balanced, and neither snow nor wind will affect it; but the main object is to increase the fruit bearing surface. If let alone you have one long cane. Pinched off while soft, green and growing, at two feet high, you probably will have five good laterals, or five times the surface for fruit to grow on.

Cutting back the laterals in spring to eighteen inches will cause them to throw out side shoots, and you have six on each side lateral, or thirty spurs for fruit bearing, as against the one long cane when not pruned. The objection of too much fruit, small in size, is overcome if the land is rich enough. The objection of loss of vigor, by check from pruning, is also overcome by more fertility. It is difficult to see how cutting out the soft first inch or two with thumb and fingers, should shock the plant. Nature prunes with wind, hailstorms and insects which girdle the top, lay an egg and stop all growth above the girdling.

We grow berries for the money, not for fun; and to make them profitable we must have "quarts of 'em" per acre, and a place for them to hang. Our method is to cut

out and burn the old wood as soon as possible after the crop is harvested Then the plant food obtained by the roots can all be applied to new growth, and none of it goes to mature the old wood and leaves. By removing the old wood we prevent further maturing of blight, parasites, and also get rid of insect foes of all kinds. Much more can be done by preventing the spread of disease than by applying remedies to cure it. The old wood out of the way, the new has a chance to grow without being crowded out of shape, and is not pushed over into the row. The new growth at this time does not take the room it does later, and the horse and cultivator can be run closer to the row. Immediately after cutting out the old canes—in August in this section—we usually have hot weather, and the cultivation will kill most of the weeds without much hand labor, and one day then will accomplish more than three in the spring.

When set in rows both ways, even at three feet, the narrow way, one can get through with horse and cultivator at this time, reducing the time required to work out the weeds to a minimum, because the new growth is small. The rapid growth resulting from the cultivation given usually brings the side branches to the ground, and the tips can be set in for plants. The sale of these will sometimes pay the whole expense of caring for the patch. If no plants are wanted, after the leaves drop trim back to the bend, which will leave them stiff and unbreakable.—*N. Y. Tribune Farmer.*

AGE OF THE ORANGE TREE.

Major D. F. Allan, Grimsby, kindly sends us the following which may interest some of the the Canadian Horticulturist readers :

In the orangery at Versailles is an orange tree raised from seed sown in 1421.

There is another in the yard of the convent of St. Salvina, at Rome, said to have been planted by St. Dominic in 1200.

In the neighborhood of Finale is an orange tree which bears nearly 8,000 oranges in a single year.

There are in Holland many orange trees which have been in the family 200 and 300 years ; one at Versailles has on it this inscription, "Serre en 1421."

THE WEALTHY APPLE.

Sir,—The Wealthy is a good deal grown here for local use and is only an October apple. It will keep in a sort of way till Christmas but gets very soft and tasteless, and is really past its best by the first part of November. The McIntosh seems to take better than the Fameuse and keeps a little better, keeping all right till March, while the Fameuse loses flavor after January; but the Pewaukee will keep till the new crop, and is good from 1st December. It is not quite up to McIntosh or Fameuse but is not far behind as a dessert apple. I have kept it in first class shape with just ordinary care in a dry cellar, till the middle of June. A. Harkness.

EDITORIAL NOTES

THE PARK IDEAL

JUST now when our American cousins are waking up high ideals of landscape beauty, and when nearly every city is planning on a park system which shall give their people the pleasure of country drives almost in the very centres of commercial life, it becomes us in Canada to shake off our lethargy and see to it that we are not behind in this splendid movement.

We have already referred to the work undertaken by the Hamilton Horticultural Society in connection with the League of Civic Improvement, but it is time the city fathers began to plan greater things. Dundurn Park and the Gore Park, for example, have long been a credit to that city, but these are too limited for a growing city ; and it would be a happy movement if a more extended area could be secured along the water ways to the west, which could in time be laid out in beautiful drives, and possibly connected with Dundurn by an avenue which would afford a beautiful outing for the citizens. Too often, in the use of water, beauty is sacrificed to utility, which in a park is a wrong ideal. For example, figure 2487 shows a cheap and unattractive iron bridge, which from the utilitarian point of view would be most desirable, but in a park would be entirely out of keeping with its surroundings.

FIG. 2487. UTILITARAIN, BUT NOT ARTISTIC.

FIG. 2488. A COMBINATION OF USE AND BEAUTY.

FIG. 2489. VIEW IN DUNDURN PARK, HAMILTON.

To one familiar with the beautiful and artistic Suspension Bridge over the Niagara river, what a feeling of depression comes in viewing the present clumsy structure, which is entirely devoid of beauty ; however, in this case beauty is secondary to utility, and we must submit without criticism ; but in the park it is entirely different, for here the highest ideal is that which most conforms to beauty and harmony. How much better for example, such a bridge as that represented in figure 2488 for crossing a stream in a park; a structure that combines beauty with durability, and will never offend the eye of the most artistic visitor.

THE VALUE OF PARKS.

EVEN from a financial point of view, the citizens of Canadian towns and cities can no longer afford to overlook the public park. Not only is the town itself made more attractive to a wealthy class of buyers, and to people of cultivated taste, but the value of real estate will also be advanced by attention to the beautiful in landscape surroundings. Kelsey in American Gardening says on the subject :

" Few persons, outside of those having given these subjects special attention, appreciate to what extent the development of a park system accentuates the æsthetic and material growth of an urban community, or how, in order to secure the best results, the improvements should be carried forward under a comprehensive plan and fixed purpose until the end is attained and the system well established."

The experience of almost every growing

FIG. 2490. THE ARCHWAY, DUNDURN PARK, HAMILTON.

city, both in this country and in Europe, vindicates the correctness of this statement. While the work of creating a park system is going on and the costly improvements are under way there is invariably criticism and honest difference in conviction as to the plans and the advisability of the expenditures. But when the work is once accomplished and the people have before them the object lesson of a continuous park and parkway development, uniting the varied attractions and benefits into a harmonious whole, doubts and misgivings give way to civic pride, complaints to compliments, and the fear of unreasonable cost changes to gratification at the result. The time has passed when public funds well spent in a park system can be considered other than advantageously invested, any more than county or municipal expenditure for roads, schools, hospitals and city buildings can be deemed extravagances.

In all metropolitan or suburban districts, park attractions for residential and industrial sections are now great factors and constantly growing features of the times. They are necessities, not luxuries, not for any class or privileged few, but are priceless possessions for all the people and the one place where neither social, financial, intellectual nor political distinctions give any one citizen rights, prerogatives or privileges over another.

BEAUTIFY THE SCHOOL GROUNDS

TO a Canadian whose taste for landscape gardening has been cultivated by travelling, it is very disappointing to observe

FIG. 2491. A BIT OF THE CASTLE AND LAWN, DUNDURN PARK, HAMILTON.

the extreme neglect that characterizes the trustees of our town and country school yards. Here is the place where the ideals of the children are formed; every day they visit these yards and they become as familiar with them as with those of their homes; the period is the formative one of their tastes, and in maturer years these ideals of garden and lawn, formed in childhood, will be realized in their own home surroundings.

FIG. 2492. MAPLE TERRACE, DUNDURN PARK, HAMILTON.

It is well that Mr. Gilchrist, in his address to Horticultural Societies, has been emphasizing the necessity of an improvement in school surroundings, and we shall be pleased to give hints from time to time in this journal for such work. The cuts on opposite page will impress the reader with the change that may be wrought by a little care in laying out and planting the grounds about even the humblest school building in the country; Fig. 2495, showing a neglected school yard, which, we regret to say, is only too often true to

FIG. 2493. LANDSDOWNE PARK, HAMILTON.

the conditions that prevail at present in rural school sections; while Fig. 2496 shows what a desirable change a little taste in planning and planting will produce.

FIG. 2494. WOODLAND PARK, HAMILTON.

BOYS' AND GIRLS' GARDENS.

THERE is a wide-spread movement to develop a taste for gardening in children. In Dayton, Ohio, forty boys' gardens were established in 1900, and the number was increased in 1901 to seventy-four, each 10 x 130 feet. A course of two years' gardening is mapped out, and each boy completing the course gets a certificate. Clapp, chairman of a committee of the Massachusetts Horticultural Society, says, "The result of this garden work at Dayton has been most extraordinary. Slidertown was one of the worst parts of the city, now it is one of the very best, and its change of name to South Park is indicative of the change wrought in every condition. Three of the worst boys were got rid of, and the rest were formed into clubs and brigades, and were given gardens and taught to respect themselves and the rights of others. Then the land rose from $300 a lot to three times that amount; and the $3,500 put into garden work carried on by the boys is said

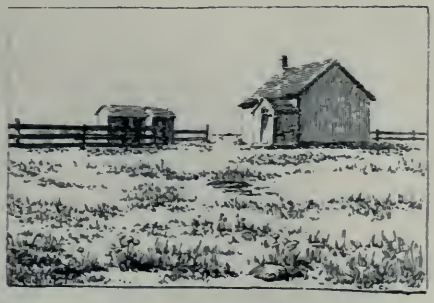

FIG. 2495. A COUNTRY SCHOOL HOUSE WITH NEGLECTED SURROUNDINGS.

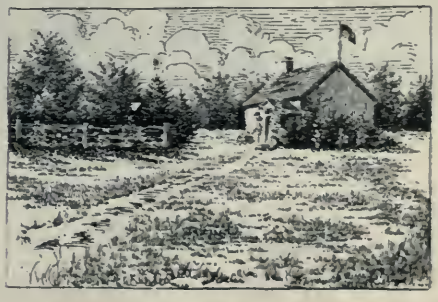

FIG. 2496. THE SAME IMPROVED.

to be the best investment for the money that the N. C. R. Company ever made."

The land, tools, seeds and instructor were furnished by the Company. Most of the boys supplied their families with vegetables during the summer months, and many earned enough money by the sale of vegetables not needed at home to pay for their school books.

The boys were given a supper, ten money prizes amounting to $35, five prizes each in the form of the Youth's Companion for a year, bronze medals and a stereopticon lecture by the president, Mr. Patterson.

Such an example is most worthy of imitation by other companies and associations having in view the uplifting and proper training of boys.

FIG. 2497. CENTRAL SCHOOL, HAMILTON.

NEPHROLEPSIS PIERSONII.

FIG. 2498. NEPHROLEPSIS PIERSONII.
THE NEW VARIETY OF BOSTON SWORD FERN.

THIS new and distinct type of this already popular fern promises to eclipse all of the older varieties in beauty and popular favor. Several of these plants, as shown in the accompanying cut, were exhibited at the recent Horticultural exhibit held at Hamilton in connection with the Fifth Convention of the Canadian Horticultural Association, of which an account appeared in the last issue of the journal. It is needless for me to say the plants were much admired, the beautiful feathery appearance of the pinnace on either side of the main stem giving it a most attractive appearance. Mr. Pierson, who was present at the exhibit above mentioned, is to be congratulated on the introduction of this decidedly pretty and novel addition to these already popular and highly decorative class of ferns. Mr. Pierson informed me that he was not certain whether this new variety was a seedling or only a distinct variation of type, as its discovery was purely accidental. I am indebted to Mr. Jas. Gadsby, of Hamilton, for the accompanying photo of his fern.

W. HUNT, O. A. C., Guelph, Ont.

THE CARE OF PLANTS IN THE WINDOW.

IN order to grow plants well in the house they must have plenty of light. Unless this can be given, they will be spindling and weak, and there will be few, if any, flowers, and these will be inferior.

The best exposure is a southern one; the next best an eastern one. A south window is the one in which to grow geraniums, lantanas, heliotropes, and all plants fond of much sunshine, while the eastern one is better for begonias, fuschias, and such plants as care more for the sun in the early part of the day than they do for it after its rays become more intense. A west window gives too much heat unless shaded considerably, but it is better than no window at all, and if you have no other to give your plants, don't go without them. A curtain of thin muslin will temper the heat greatly, and vines can be trained over the glass in such a way as to break the fierceness of the sun's rays. A north window is not suited to the needs of flowering plants, but some which are grown solely for foliage can be kept there. Ferns, palms, aspidistra, ficus and lycopodiums will do quite as well there as in a window exposed to the sun. English Ivy can be trained about it. Tradescantia, in baskets, can be hung up in it, and thus it can be made beautiful without flowers if you have a love for "green things growing."—*Vick's Magazine.*

Fig. 2499. Chrysanthemums at the O. A. C., Guelph.

CHRYSANTHEMUMS

BY

WM. HUNT,

SUPT. GREENHOUSES, O. A. C., GUELPH, ONT.

THESE glorious autumn flowers have probably, during the past, season been more resplendent in their gorgeous colors and beautifully formed blossoms than for many years past. The comparatively low summer temperature and moist atmospheric conditions that have prevailed during the usually hot months of July and August have doubtless been responsible, in a very large measure, for the success that has been attained in chrysanthemum culture during the season of 1902, wherever these popular autumn favorites have been grown. Very little is heard of that "bane" of the chrysanthemum, viz., the "rust"; a fact that goes to prove that a moderate temperature, a moist atmospheric condition, as well as good culture, are conditions that best suit the chrysanthemum to resist the development of this destructive disease.

Although the season is nearly over, a few notes and comments on some of the varieties suitable more particularly for window plants may perhaps be acceptable, as it is a matter of great difficulty even for the professional grower to select from among the host of beautiful varieties available those that are best suited for growing for window and house decorative purposes.

The chief points to be considered in this respect are not only the size, form, and color of the flowers; but habit of growth and a robust constitution, as well as early or late flowering propensities, are points that must be considered when selecting varieties for the purpose before mentioned.

The keeping qualities of the flower has also to be taken into consideration. Sub-

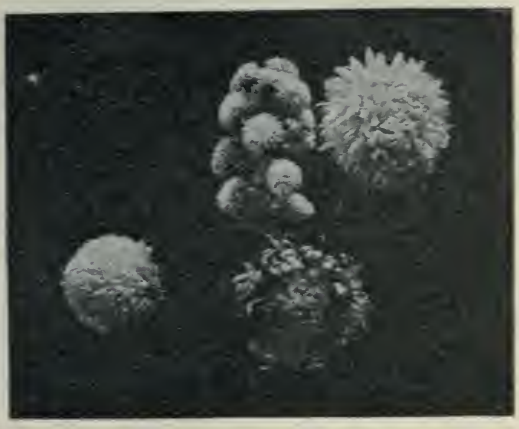

FIG. 2500. ROSE TRAVENA.
MRS. ROBT. CRAIG. MLLE. MARIE H.
JUDGE HOITT.

stance and form of the flower are important factors in this respect. The short petalled and compact flowering types are, as a rule, the best varieties to resist permature fading and decay. The small flowering pompon varieties are usually varieties that hold their blossoms for a long time in good condition. The pompon variety, Rose Trevena, Fig. 2500, shows a spike of these miniature chrysanthemums — that are such favorites with many flower lovers — taken from a plant that had been in flower for over three weeks, and as seen in the photo the flowers are still fresh and perfect in form on the spike. The plant that this spike was taken from has been greatly admired, covered as its several branches were with its dainty little pink blossoms, nearly the whole length of the stems, which are only about 18 inches high. If only one pompon be grown let it

FIG. 2501. MRS. L. CANNING.

be the variety shown, Rose Trevena, as it is a good grower and is so profuse in flowering. Other desirable pompon varieties are Golden Fleece and Snowdrop.

The Chinese Anemone flowered varieties are, from the peculiar formation of their flowers, great favorites with many admirers of the chrysanthenmum. In most of these the outer florets are long and regularly arranged, whilst the centre florets are short, resembling quills, and are thickly set.

The Japanese Anemone flowered varieties are very showy and attractive, but as a rule are tall-growing plants. Judge Hoitt and Surprise are two good varieties of this type, a fair specimen of the flower of the former is shown underneath the pompon variety in Fig. 2500. In color it is a shell pink, whilst Surprise is paler in color, fading almost to a creamy white. Both are good varieties of this type, and early flowering.

The incurve form of flower is probably the most popular type of chrysanthemum. A perfect incurve flower should be nearly globular in form, and as its name indicates, the floret should all curve inwards towards the centre or apex of the flower. Amongst the many varieties of incurves, Major Bonaffon (bright yellow), Ivory (white), Mrs. Robert Craig (white, see Fig. 2500), and Mrs. Col. Goodman (blush pink), see Fig. 2502, are good Chinese and Japanese incurve varieties that will give a good variety of color as well as plants of a dwarf growing habit, giving good flowering results usually under ordinary conditions and treatment. Ada Spaulding is also a good variety of dwarf habit, and has pretty cream colored flowers.

Amongst what are known as Japanese varieties, of irregular form, both in florets and outline, are the following varieties given as nearly as possible in rotation according to the time of flowering; 1st, Glory of Pacific

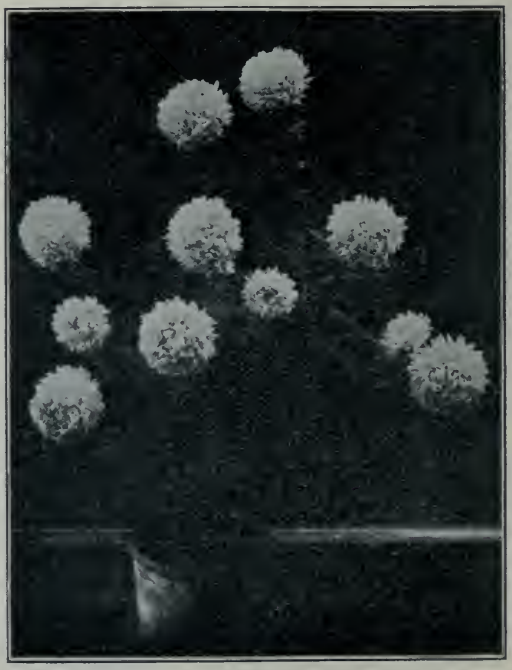

FIG. 2502. MRS. COL. GOODMAN.

(pink), Midge (white), Fred. Walz (pale pink), Golden Gate (bright yellow), Mutual Friend (white), W. H. Chadwick (yellow), Defender (dark crimson), Mlle. Marie Hoste (white), Fig. 2500, and W. H. Lincoln (bright yellow). The latter is an old variety, but still one of the best and latest, and is of specially good habit of growth and flowering character for a window or conservatory.

Amongst reflexed varieties for the window, Mrs. L. Canning (white), Fig. 2501, and Miss Elma O'Farrell will give good satisfaction. The latter is a late, large flowering variety of a peculiar shade of salmon rose, very odd and pretty.

In writing this article on these popular autumn flowers, many perhaps equally good varieties both new and old, have of necessity in so short a list to be omitted. But those that are mentioned have proved to be varieties that have invariably, from year to year, shown good and attractive points, under conditions that many other varieties perhaps more attractive in many ways, have proved under test to be partial failures.

In a future paper I hope to have something to say on the culture and treatment of the chrysanthemum from the time the old plants are out of flower until flowering time again.

HELIANTHUS MULTIFLORUS.

OUR engraving is a good representation, minus the color, of the Helianthus multiflorus, as grown this summer at Maplehurst. We have for some years past been charmed with the Golden Glow Rudbeckia, but this comes a little later in the season, and when grown in clumps has a most charming effect, quite equal, if not superior to the former. It is not quite so tall, grows more compact, and its aster-like flowers are more double and striking in effect.

The sunflower family to which it belongs contains, in addition to the common annual sunflower, about fifteen hardy herbaceous perennial plants, and to one of these our subject belongs, viz., H. decapetalus, a species which is found in most soils from Quebec to Georgia. Under cultivation several beautiful garden varieties have been produced, some of them with quilled florets, like a cactus dahlia, and, altogether, the multiflorus varieties are the most popular of all perennial sunflowers. They are quite dwarf compared with the annual sunflowers, reaching only a height of from two to five feet. In our opinion, no collection of hardy perennials should omit Helianthus multiflorus flore pleno, and, to get the best effect, we would advise the planting of them in clumps of a half dozen in the perennial border.

FIG. 2503. HELIANTHUS MULTIFLORUS.

THE HARDY PERENNIAL BORDER

PAPER READ BEFORE THE C. H. A. CONVENTION BY

MR. A. ALEXANDER,

PRESIDENT OF THE HAMILTON HORTICULTURAL SOCIETY.

FIG. 2504. SAMUEL AYLETT,
Supt. of Trade Exhibit, C. H. A.

THE subject of hardy herbaceous plants and their use in the ornamentation of private grounds and public parks has received a good deal of attention during the past few years, and the numbers of new species and varieties of these plants suitable for the hardy perennial border are being multiplied at a rapid rate.

When your Vice-President, Mr. C. M. Webster, asked me to prepare something to read before this convention I felt it would be presumptuous in an amateur to stand up before a number of practical and intelligent horticulturists and tell them anything they did not already know about hardy plants. However, as he told me something brief, just to introduce the subject for discussion would do, I agreed. I was the more willing to do this as the earliest and sunniest recollections I have in connections with flowers hover over the borders and beds of my childhood home, which were filled exclusively with old fashioned perennials. There were lilies stately and tall in large groups, great masses of Sweet William, primulas in endless variety, scarlet lychnis, saxifraga, phlox, pæonies, hollyhocks and lots of others too numerous to mention. These were all interesting as they one by one opened their blossoms in the floral procession, but to me there was and is still in the yearly miracle of their re-awakening, in watching the tips pierc-

FIG. 2505. T. LAWSON.
Secretary Hamilton Gardeners' and Florists' Club.

FIG. 2506. CHAS. M. WEBSTER,
1st Vice-President, C. H. A.

ing the soil, in their varied modes of enfolding their first leaves with such a variety of color too, from the tenderest green to deep crimson, an added pleasure not derived from ordinary bedding plants. I consider this a strong argument in favor of the cultivation of these hardy flowers that they afford so much joy in watching their yearly appearance as soon as the icy grasp of winter is relaxed.

While I do not say that hardy perennials will ever take the place of ordinary bedding plants for the decoration of public or private parks or grounds, or can be used so as to procure the striking color affects secured by the geranium or coleus and others, still I assert that any one possessed only of a small garden or whose acres are filled with beautiful flowers of the hardy sort, can have from early spring to autumn frosts, a continuous succession of bloom.

We can have them suited to every situation, sunshine or shade and to nearly every kind of soil. Not only so, but when once established in our gardens they stay with us forever if we are fairly good to them, increasing in bulk and beauty from year to year. We have them gay as the oriental poppy, and showy as the pæonies; while many of them are excellent as cut flowers, as the single and double flowering pyrethrums, so many beautiful hybrids of which are being introduced. Need I name the Iris family with its varied classes all exquisitely beautiful; the aquilegias in infinite variety, from our own native variety to the Rocky Mountain one with its heavenly blue and immaculate white, so blue and so white, as if it had been painted when gazing into the azure from its Rocky Mountain home; the campanulas, all dainty and general favorites; the larkspurs too, giving us color and stately growth from pure white through every gradation of color from blue to red. Many of these hardy plants are very fragrant, such as the sweet valerian and many others quite as hardy.

FIG. 2507. WHITE CAMPANULA, IN MR. ALEXANDER'S GARDEN.

FIG. 2508. DICENTRA CANADENSE AT MR. ALEXANDER'S.

I have no intention of wearying you with lists of names of these hardy plants. The best and most useful list that I have seen is that issued by the Experimental Farm at Ottawa, consisting of 100 varieties and compiled by Mr. Macoun, the horticulturist there in 1897.

Just a word about the border itself. Hardy perennials I find thrive best in good ground with lots of rotted leaves worked into it. The thrift of the plants in such soil is so marked as to well warrant them getting it.

These plants, many of them at least, increase so fast and spread so much that they require to be lifted, divided and replanted every three or four years. Some of them, such as the perennial phlox, so exhaust the soil in their immediate neighborhood that they are better if their position is changed every two years. The pæonies and some others are better not to be moved. Every fourth year I trench my perennial borders. I proceed as follows: I take out a trench two spades deep and two spades wide, wheeling the soil to the other end where the operation will finish. I then mark off another space equal in width to the trench made and with my spade I take off about two inches of the top soil and throw it into the bottom of the trench; on this I put a good coating of fresh manure, tree leaves or the product of a rubbish heap of vegetable matter of any kind, then I throw upon this a spade deep of the earth from the second trench, on the top of this I spread some well rotted manure or humus of any kind, then on this I throw up another spade deep of the soil left in the trench; when this is done we have a second trench, the same depth and width as the first, and so I proceed until I reach the end of the border, where I find the earth taken out of the first trench to fill up the last with, its two layers of manure or other enriching material sandwiched twice. You will see that this really means the turning

FIG. 2509. IBERIS GILBRATICA, (CANDYTUFT.)

FIG. 2510. HARDY FLOWER BORDER, AT MR. ALEXANDER'S.

FIG. 2511. HARDY FLOWER BORDER IN GARDEN OF MR. A. ALEXANDER, HAMILTON.

upside down of the whole border to the depth of about 18 inches and enriched with two layers of manure, one near the bottom one and one midway up. The reason of putting the fresh and unrotted manure in the bottom and the other higher up is that the plants when replanted will find out and get the benefit of the higher layer of manure the first year, and by the time the roots get down to the lower it will be so decayed that they can appropriate it to their strengthening and beauty and can bid defiance to hot summers and other adverse surroundings for they are feeding on unseen supplies of food and moisture.

Planting is best done in the early spring. It is better to have good clumps or masses of the best of these perennials than to have little bits of every thing you can lay hands on if the ground is limited in extent. I would recommend a very liberal planting of the hardy bulbs, not lilies only, but the scillas and chionodoxa, the snowdrop and crocus, and the Narcissus family should be fully represented. The scillas, and the Glory of the Snow, are most satisfactory and never fail to cheer the border, for they increase and improve from year to year.

I make a liberal use of many of our native plants. What more satisfactory than the trilliums, the hepatica and the blood root to brighten the border with their pure white and azure blossoms, and the phlox divaricata makes a fine mass of purple lasting for weeks, and many others. Many species of asters are invaluable in the fall months.

We sometimes hear the complaint that a perennial border is an unkempt and unsightly affair as compared with the trim beds filled with greenhouse plants. It is, if not cared for. Plants needing support should have it early, and all flowers that are done blooming should be removed and the soil between the plants kept stirred from time to time.

I hope to see some of the commercial horticulturists of Canada go into this business and present us with a catalogue of these hardy plants as extensive as those issued on the other side of the line. And it would be well if the commissioners of public parks gave this matter some attention and planted borders of these perennials all labelled so that the public could see for themselves and choose for their own gardens and be instructed as well as interested. Much more might

FIG. 2512. FOXGLOVES.

be said on this subject, but I must close. I therefore urge the more general cultivation of hardy plants: It is interesting to watch their development, because there is a touch of home in the coming of the truly hardy varieties of flowers that seem to defy all kinds of abuse and quickly respond to good care, and we watch for them as eagerly as the seasons come and go; because the first cost of them is less than the tenderer and more aristocratic bedding plants; because of the greater variety and the longer flowering period we can have each year by their use; and they are less trouble than the more tender sorts and increase from year to year.

FIG. 2513. ROCKET, (VERY FRAGRANT), SHOWING THE EFFECT OF MASSES, AS COMPARED WITH SINGLE FLOWERS, AT MR. ALEXANDER'S.

PROFIT IN THE BAY WINDOW.

AN almost indispensable appurtenance to the modern house is the bay window, and yet in the majority of homes it is either a vacant corner, or else is used as a "plant hospital." A few sickly, unsightly plants of no particular variety are considered sufficient furnishing for what might be the most attractive part of the room. Not only may the bay window be made "a thing of beauty and a joy forever" but it may become a source of profit if the ower so desires.

There are greenhouses and several floral companies in the town in which I live, but, nevertheless, a gentlemen near me receives an average of nearly $1 per day from his bay window. He devotes the greater part of the window to carnations, and a beautiful display they make. There is a ready demand for all he can raise, and the care and cultivation of the plants affords him great pleasure, as well as a fair profit. The cultivation of the carnations is very simple. Roots may be obtained from cuttings made at any time during the fall, winter, or early spring months. The roots should be set in the ground early in the spring, at about the season that lettuce and other early hardy vegetables are put in the ground. They should be set in soil that is well drained—as the carnation does not take kindly to a wet soil—in rows ten inches apart and eight inches apart in the row. The flower shoots, as they appear, should be cut back till the latter part of September, when they should be placed in the boxes or pots they are to occupy through the winter, though they should still be left out as long as the weather is mild.

Although there are many hundreds of varieties, but few have been found adapted to window culture. Among the white varieties the Degraw and Maimie are best adapted to window growing. The La Purite, carmine, and Astoria, yellow, are also hardy varieties and take kindly to cultivation. A temperature of 60 degrees is sufficient for the production of these flowers. The soil should be rich and mellow and the plants kept free from the green fly and other plant insects.—*American Agriculturist.*

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 12th. It should be addressed to L. Woolverton, Grimsby, Ontario.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

ADDRESS money letters, subscriptions and business letters of every kind to the Secretary of the Ontario Fruit Growers Association, Department of Agriculture, Toronto.

POST OFFICE ORDERS, cheques, postal notes, etc., should be made payable to G. C. Creelman, Toronto.

MONSTER MAP OF THE UNITED STATES.

SPACE has been allotted the U. S. Department of Agriculture for a great garden map of the United States, of about two acres in extent. The different state laws will be marked by walks of red gravel, so that from the Agricultural Building this map would be like a bird's-eye view of the United States; and a visitor walking on the paths, would, so far as vegetation is concerned, be walking through the country. This will certainly be a novel exhibit.

THE report of the Western Horticultural Society for 1901-2 is to hand, and its enlarged size shows the progress and growth of this young society, which has now been five years in existence. Among the interesting papers read we noticed one on the "Judging of Vegetables and Roots," which we hope to publish next summer in time to be of use to our societies at the time of their flower and vegetable shows. Mr. Melvin Bartlett, Box 438, Winnipeg, is the Secretary.

MR. C. M. WEBSTER, of Hamilton, in speaking of the adaptability of our climate for rose-growing, says:

"There are after all but few who realize the possibilities of rose culture in Canada. We have received glowing accounts of rose growing in the Maritime provinces and from Newfoundland, where by reason of the cool

moist summer and heavy snow protection in the winter, roses of all kinds thrive unusually well. In the northern part of Ontario and Quebec the hardy roses have in many cases given amazing results, the heavy protection of snow often bringing the plants through in better condition than is seen in the more southern sections. Throughout the other portion of Ontario, and particularly in the Niagara Peninsula, the everblooming roses give the utmost satisfaction out of doors and can be safely wintered with very little trouble. On the coast of British Columbia the paradise for everblooming roses is found, and it is a matter of surprise to many Canadians that one portion of the country yields perfect growing roses often as late as Christmas Day. Perhaps a greater surprise in the matter of plant growth will yet come from the great Canadian West. It has already been proven that tea roses there grow with most unusual vigor, and constitute one of the very best summer bedding plants. We have many letters from that section that will testify to beds of tender roses enduring the severe winter safely covered by the protecting snow, and breaking into early growth and bloom with scarcely the loss of a single plant. Success in rose growing has attended trials in North Alberta and the province of Saskatchewan, and we heard some years ago from a gentleman stationed at one of the Hudson Bay Company's posts on the shore of Hudson Bay of the wonderful success in the cultivation of some roses brought to him from Great Britain. As the possibilities of the Canadian West are revealed, it is plainly evident that we have still much to learn about that section."

Question Drawer

Wheat Wire Worms.

1326. Sir,—I herewith send you some pests called here "yellow wire worms." There are millions of them in the ground, and they devour such seeds as peas, beans, etc., when planted. Those that escape them long enough to become plants, are often killed by having their roots and stalks eaten hollow. Root crops, as potatoes, etc., are ruined by them; also such crops as pumpkins, tomatoes, etc, are filled with them wherever they touch the ground. In one case thirty-five worms were feeding off one tomato berry. Please name the beast and tell me how to exterminate it and you will do a great favor to many.

D. C. Crosby, Berwick, N. S.

REPLY BY PROF. LOCHHEAD, O. A. C., GUELPH.

In reply to the inquiry regarding "yellow" wire-worms, I beg to say that the specimens sent in are the common Wheat Wire-worm, (*Agriotes mancus*). The adult, or Click beetle, deposits its eggs on the roots of grasses in early spring, and may prove very troublesome for the two or three years that it remains in the larval stage. The larva, or wire-worm, passes the winter in the earth and is troublesome in spring. They cease feeding in the fall, generally before November 1st, and descend several inches into the ground, where they remain in a torpid condition during the winter. In the spring, they come towards the surface with sharpened appetites after their long rest. When they become full grown, which occurs between two and three years, after the eggs are deposited, about July 1st, these Wheat Wire-worms prepare for pupation (their resting stage), by forming a little earthen cell in the soil, usually less than six inches from the surface of the ground. The worms then turn into the little white pupae. They remain in this condition about three weeks,

when they come to the surface in the form of the Click beetles, already referred to. In this condition, they are harmless. It is only in the larval stage that they are injurious, when they will devour mostly any green vegetation which is in direct contact with the ground, such as tomatoes, etc., which often lie on the surface.

A great many experiments have been conducted in trying to combat the wire-worms, but none have been found very practical. However, much can be done in checking the increase of wire-worms by exposing the pupæ by fall ploughing. In this way the little earthen cells mentioned above, which contain the pupæ, are broken up and the pupæ perish from exposure to the frost and cold of winter. In connection with this fall ploughing, and subsequent cultivation, we also recommend the method of short rotation of crops to farmers who have land badly infested. It is not wise to keep the ground in sod for more than a year or two. Those farmers, as a rule, who practice this method for at least three or four years, are not troubled much with wire-worms.

PROTECT YOUR ORCHARDS AGAINST MICE.

THE time of year has now arrived when we should take precautions against injuries from mice during the coming winter. The experience of many fruit growers, particularly in the eastern part of the province, during last winter, proves that it is very much easier to protect our trees from ravages of mice than it is to remedy the evil when done. Last year, I successfully protected about seven hundred young trees, planted from three to four years ago, with ordinary building paper, cut in strips about eleven inches high and long enough to wrap around the tree once or twice, and tied in the middle with binding twine. Out of the above number of trees wrapped, I only had one injured and that was above the paper.

The mice, in working under the snow follow the ground line, very seldom if ever tunnelling into the snow off the ground.

A man can easily wrap from four to five hundred trees a day, and the cost for paper is a mere trifle. A roll of paper costing 45 cents or 50 cents will wrap about eight huudred trees, planted from two to four years.

I wish to particularly warn fruit growers against using tar paper for wrapping. I have seen in many cases injury from sunscald just above the paper, not under the paper as is generally supposed by some.

In the spring of the year it is not necessary to remove the building paper. All that is required is for a man to walk through the orchard and cut the string, and the papers will blow off during the summer.

Mice in this vicinity do not seem to be as numerous as at this time last year ; however, considering the small cost and short time required for wrapping, I advise all fruit growers to protect their trees against possible injury, for if snow should fall early and remain on the ground until late in the season, the mice would be deprived of their supply of weed seeds, which constitutes a large part of their winter food.

I might say that a convenient way to prepare the paper is to cut it with a sharp knife on a smooth board into pieces (11 x 7 or 8 inches) and place in a market basket for carrying in the orchard.

Maitland, HAROLD JONES.

Nov. 21st, 1902.

Mr. Rood. Mr. nd Mrs. Lane. Mrs. Jooste. W. W. Moore, Ottawa. W. L. Jooste. Mrs. Kirkpatrick. Capt. Kirkpatrick, representing the Imperial Government.

A VISIT FROM THE SOUTH AFRICAN DELEGATION.

BY G. C. CREELMAN.

THE war had no sooner closed in Egypt than schools and universities sprang up and a season of prosperity set in around Khartoum such as had never been known in that benighted country.

Immediately after peace negotiations were signed, Lord Milner, now in charge of the South African forces, selected a party of Boers and Burghers together with their wives, and started them on a tour of inspection around the world. They covered practically all Canada from Halifax to Vancouver, inspecting everything of interest from a commercial standpoint.

The writer had the privilege of their company in the Province of Ontario for several days, and it is a pleasure for me to state that I never enjoyed an outing more than that passed in the company of the delegates from South Africa. The entire party, consisting of ladies and gentlemen, seemed to have but one object in view, namely : the gathering of information which would be useful to them on the farms and at home. Every feature in Canadian agriculture was closely studied, questions were asked incessantly regarding our method of work and handling of machinery, the care and management of farm animals, the method of constructing farm buildings, the planting and care of the orchard, the variety of grains and grasses—all of these things interested them, and each night before retiring the gentlemen wrote a complete digest of the day's work.

They visited the Agricultural machinery shops, where binders and reapers are made, carriage and wagon shops, the Agricultural College and the Experimental Farm, but nowhere did they express themselves as being so well pleased as in the orchards of Ontario. In the Niagara district particularly, they were struck with the sight of mile after mile of orchards cleanly cultivated and the fences removed, looking like one large farm composed of thousands of acres.

These men who fought against the British have laid down their arms, accepting the changed condition, and in a few months will return home, carrying the news of progressive agriculture to their farms and villages.

EXPORT OF INFERIOR FRUIT A LOSS.

THE government agents at Glasgow and Liverpool again draw attention to the great injury that is being done the apple trade by the shipping of inferior fruit. Here is a typical case; 160 barrels of XX Baldwins shipped by Mr.———, of Brighton, Ont., were sold to-day at prices that cannot yield the seller anything. They were so small as to be quite useless for the trade here, in fact they never should have left Canada. 128 barrels branded Kings were opened up and two-thirds were of a different variety. 9 barrels of this same lot turned out 6 barrels 20 oz. pippins, 1 barrel Ribston and 1 barrel Kings. This wrong naming, though not as serious a matter as fraudulent packing, is very annoying to the trade, and is another illustration of the care that should be used in these details of the apple trade.

APPLE SCAB IN YORK STATE

"Apple scab has," says S. D. Willard, writing in Country Gentleman, "developed in Ontario County, N. Y., to an extent rarely before observed in the section. There seems to be little difference in many instances whether trees have been sprayed or not. The fact, however, is clear that not more than one-third to one-half the apples in the immediate vicinity, and particularly Baldwins and Greenings, are fit for barreling. The majority of them are going to the canning factories. It is a well-known fact that most of the apples raised in the section are made up of Baldwins and Greenings, but this season has demonstrated to the minds of some, at least, that there is a marked difference in varieties as suffering from the pest. My own apples, made up largely of Hubbardston Nonsuch and Boiken, have been almost entirely free from it, particularly the latter variety, which has never shown any disposition to suffer in this way."

BALDWINS, GREENINGS AND YORK IMPERIALS

WOODALL & CO., of Liverpool, write: "Receipts are 61,926 barrels, which is a further increase on late liberal supplies; there is, however, no signs of falling off in the demand, which has throughout been good. What are now coming forward is largely winter stock, but it has been quite a disappointment that so great a proportion should be poor, unattractive fruit. It may be holders are sending seconds with the view of keeping the best till later on; this may be good policy, as, fortunately, our markets have readily taken everything offered, and paid prices in accordance with the value. The range in quotations is very wide, as while good to fine ruled high, ordinary and inferior, in consequence of the large quantity, are much lower in proportion. This may be instanced in Baldwins, which sold up to 20/ per barrell, and sound inferior down to 7/ per barrel. Greenings, through the uncertainty of how they may turn out, are hopelessly out of favor, and some which appear to be good, reliable parcels do not realize their value. At yesterday's sales the demand was well maintained and closed at 1/ to 2/ decline on ordinary, and about unchanged for good, some Western York Imperials touching 23/ per barrel."

BOOKS FOR FRUIT GROWERS.

FRUIT, FLOWERS. ETC.

Apple Culture, Field Notes on. Bailey. ... $0.75
Bulbs and Tuberous Rooted Plants. C. L. Allen ... 1.50
Bush Fruits Prof. A. Card ... 1.50
Chrysanthemum Culture. Morton. Cloth .. 1.0
Chrysanthemums, How to Grow ... .25
Cider Makers' Handbook. Trowbridge ... 1.00
Cranberries, Cape Cod. James Webb. Paper ... .40
Cranberry Culture. White ... 1.00
Crops, Spraying. Clarence M. Weed ... .25
Dahlia, The. Lawrence K. Peacock ... .30
Floriculture, Practical. Peter Henderson ... 1.50
Florida Fruits, and How to Raise Them. Harcourt ... 1.25
Flower Garden, Beautiful. Matthews ... .40
Fruit Culturist, American. Thomas ... 2.50
Fruit Grower, Practical. Maynard ... .50
Fruit Harvesting, Marketing, etc. F. A. Waugh ... 1.00
Fruit, The. P. Barry ... 1.50
Fumigation Methods. Willis G. Johnson ... 1.50
Fungi and Fungicides. Clarence M. Weed. Cloth $1.00, paper ... .50
Garden Making. Prof. L. H. Bailey ... 1.00
Grape Culturist. A. S. Fuller ... 1.50
Grape Grower's Guide. Charlton ... .75
Grape Growing and Wine Making, American. Prof. George Husmann ... 1.50
Greenhouse Construction Prof. L. R. Taft. 1.50
Greenhouse Management. Prof. L. R. Taft. 1.50
Horticulture, Annals of. Prof. L. H. Bailey. 1.00
Horticulturist's Rule Book. Prof L. H. Bailey ... .75
House Plants and How to Succeed with Them. Lizzie Page Hillhouse ... 1.00
Insects Injurious to Fruits. Saunders ... 2.00
Irrigation Farming. L. M. Wilcox ... 2.00
New Horticulture, The. H. A. Stringfellow 1.00
Nursery Book. Prof. L. H. Bailey. Cloth . 1.00
Nut Culturist, The. Andrew S. Fuller ... 1.50
Peach Culture. Fulton. Revised edition ... 1.00
Pear Culture for Profit. Quinn. New and revised edition ... 1.00
Plants, Handbook of. Peter Henderson. New enlarged edition ... 3.00
Plants, Propagation of. A. S. Fuller ... 1.50
Plants, Your. James Sheehan ... .40
Plums and Plum Culture. F. A. Waugh ... 1.50
Principles of Fruit Growing. Prof. L. H. Bailey ... 1.25
Pruning Book, The. Prof. L. H. Bailey ... 1.50
Quince Culture. W. W. Meech ... 1.00
Rose, The. Its Cultivation, Varieties, etc. H. B. Ellwanger ... 1.25
Rose, Parsons on the ... 1.00
Small Fruit Culturist. A. S. Fuller ... 1.00
Spraying of Plants, The. E. G. Lodeman .. 1.00
Strawberry, The A B C of the. T. B. Terry A. I. Root ... .50
Strawberry Culturist. A. S. Fuller. Illustrated ... .25
Vineyard at Lakeview. My ... .50

A Magazine Thirty Years Old:—The Christmas (December) Number of THE DELINEATOR is also the Thirtieth Anniversary Number.

To do justice to this number, which for beauty and utility touches the highest mark, it would be necessary to print the entire list of contents. It is sufficient to state that in it the best modern writers and artists are generously represented. The book contains over 230 pages, with 34 full-page illustrations, of which 20 are in two or more colors. The magnitude of this December number, for which 728 tons of paper and six tons of ink have been used, may be understood from the fact that 91 presses running 14 hours a day, have been required to print it; the binding alone of the edition of 915,000 copies representing over 20,000,000 sections which had to be gathered individually by human hands.

COMING EVENTS.

Ontario Fruit Growers' Association, at Walkerton, Dec. 1, 2, 3.
Agricultural and Experimental Union, at Guelph, Dec. 8, 9.
Provincial Winter Fair, at Guelph, Dec. 9, 10, 11, and 12.
Western Dairymen's Association, at Brantford, Jan. 13, 14, 15.
Eastern Dairymen's Association, at Ottawa.

Notice to Apple Growers

We are preparing for the use of the Department of Agriculture a list of the apple growers of Ontario. Any grower can have his name placed on the list by sending his address to the Secretary together with the number of trees he has in bearing.

G. C. CREELMAN, Secretary.

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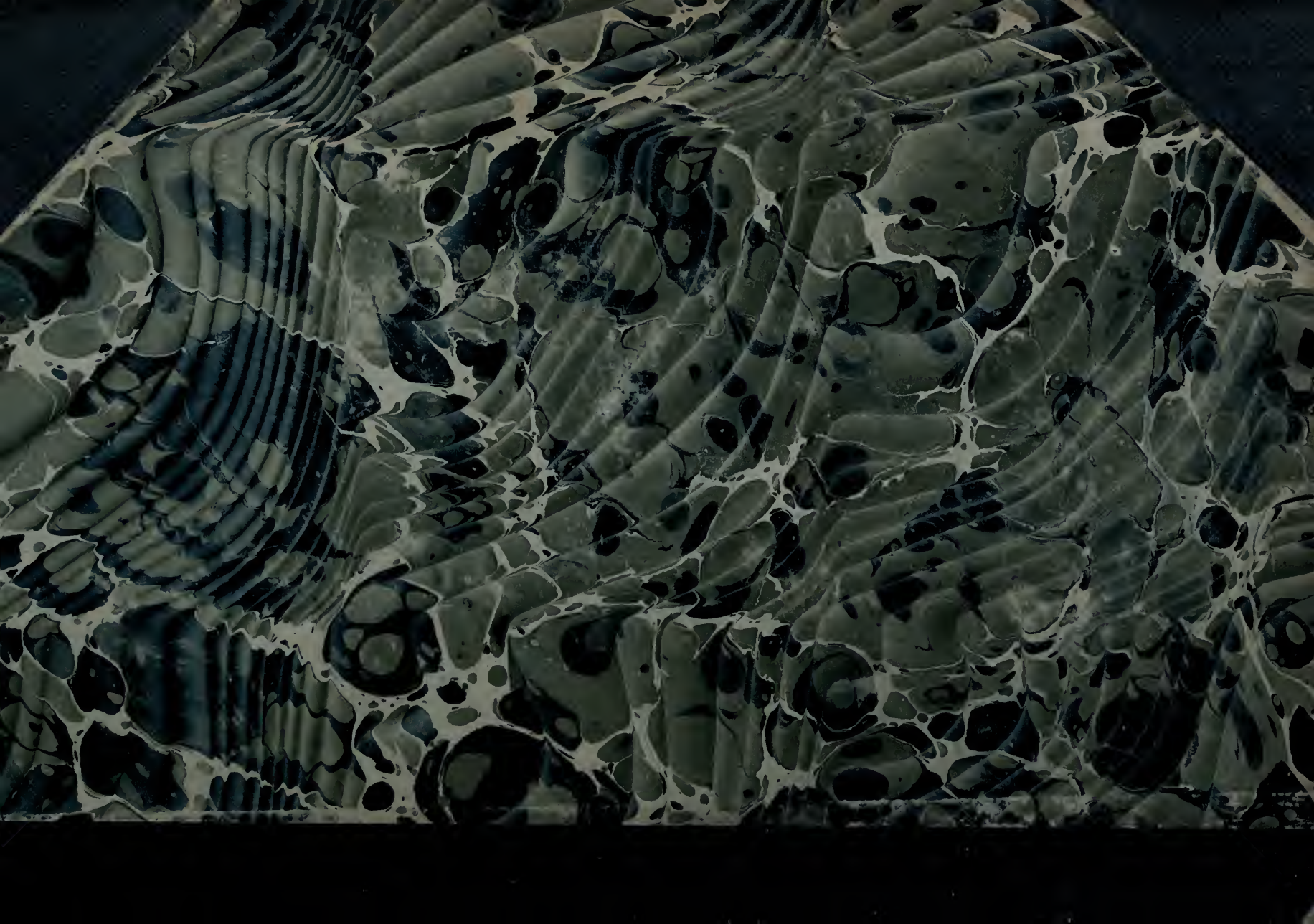
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